

Davy A
MODERN SYSTEM
OF
NATURAL HISTORY.

CONTAINING
Accurate Descriptions, and faithful Histories,
OF
ANIMALS, VEGETABLES, and MINERALS.

Together with
Their Properties, and various Uses in MEDICINE,
MECHANICS, MANUFACTURES, &c.

Illustrated
With a great Variety of COPPER-PLATES, accurately
drawn from Nature, and beautifully engraved.

By the Rev. SAMUEL WARD,
Vicar of Cotterstock, cum Glapthorne, Northamp-
tonshire; and others.

VOL. X.

*The great Creator did not bestow so much Curiosity and
Workmanship upon his Creatures to be looked upon with a
careless incurious Eye.*

Derham's Phys. Theol. Book xi.

L O N D O N :

Printed for F. NEWBERY, the Corner of St. Paul's
Church-yard, Ludgate-street.. 1776.



THE
NATURAL HISTORY
OF
FISHES.

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THE
NATURAL HISTORY
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FISHES.

THE PEARL.

THIS differs from others of this kind, in having a scaly body, and from a plaice in the prickles which surround the roots of the fins. The upper part of the body is of a deep brown, marked with spots of dirty yellow: the lower part is of a pure white. Its eyes are on the left side, to the right of the mouth, and are at a greater distance from each other than those of the plaice. These fish are frequently brought to the London markets, but they are smaller than the turbot, and inferior in goodness.

THE GILT-HEAD, OR GILT-POLL.

IT is a broad fish, compressed on the sides, and somewhat resembling a bream. It grows to the length of eight or ten inches, and to the weight of ten pounds. The back is sharp, and of a dusky green colour. Between the eyes is an arched stripe, resembling a crescent, of a gold colour; the horns of which point towards the head; and from this semilunar gold-coloured spot, the gilt-head takes its name. It has usually a black spot at the upper corner of the cover of the gills, and another of a purple colour below them. The teeth in each jaw are oblong and roundish. The tail is very much forked.

This is one of those fish that haunt deep waters on bold rocky shores: it feeds principally on shell-fish, which it comminutes with its teeth before it swallows. It is frequently seen in the markets of Rome, Genoa, and Venice; and is sometimes taken on our coasts. It is but a coarse fish; and was held in very little esteem by the Romans, except it had fed on the Lucrine oyster.

No praise no price a gilt-head e'er will take,
U fed with oysters of the Lucrine Lake.

MARTIAL, lib. iii. ep. 90.

THE

THE SEA BREAM.

THIS species grows to a size equal to that of the gilt-head : its form and the figure of the teeth are also much the same. The upper part of the body is black, the sides are of a lighter colour, and the belly is of a silver white. The eyes are large, and the covers of the gills resemble those of a salmon. It has only one fin on the middle of the back, which extends its whole length ; and another fin, at the bottom of the belly, reaches almost from the vent to the tail. The scales are very large, and the tail is forked. This fish is not very common in England ; the flesh of it cuts red, and has a very delicate taste, far surpassing either the river or the pond bream. It is frequently caught in rock-fishing, and by the salmon fishermen in the Mersey.

There is a variety of the sea-bream, whose body is entirely red.

THE OPAH,

THE opah is a beautiful, and an uncommon fish, weighing about seventy or eighty pounds, and somewhat like the sea-

sea-bream in shape. The length is about three feet and an half ; the breadth from back to belly almost two feet ; and the thickness, from side to side, does not exceed six inches. In proportion to the size of the fish, the mouth is small, forming a square opening, and the jaws destitute of teeth. The tongue is rough, and thick set with beards or prickles, pointing backwards, so that any thing may pass down, but cannot easily return back. The eyes are very large, covered with a membrane, and shining with a glare of gold. The body diminishes very small to the tail, which is forked, and expands twelve inches. The fins and tail of this fish are of a fine scarlet ; but the rest of the body is beautiful beyond description. It is smooth, and covered with almost imperceptible scales. The colour of the upper part is a kind of a bright green, variegated with whitish spots, and enriched with a shining golden hue, resembling, in a great degree, the splendour of the peacock's feathers ; this gradually vanishes in a bright silver colour ; and the gold begins again to predominate near the belly, in a lighter ground than on the back.

THE

THE WRASSE, OR OLD WIFE.

THE shape of this fish resembles that of the river tench: it grows to the weight of four or five pounds, and is covered with large scales. These fish vary infinitely in colour; but in general are reddish, and most beautifully striped, especially about the head, with the richest colours, such as red, blue, and yellow. We must not therefore multiply the species from these accidental teints, but particularly attend to the form which never alters. The snout is oblong, and turns upwards; the lips are thick and fleshy, projecting beyond the jaws; but the mouth is small. The teeth in the jaws are ferrated, but not very sharp. The tail is rounded at the end, and is formed of fourteen soft branching rays.

This species is found in deep water, adjacent to the rocks, and is to be met with in the British and Irish seas. It is more agreeable to the sight than to the taste. The Welch call it gurach, or the old woman; the French call it la vieille, or the old woman; and the English give it the name of old wife. It is difficult to assign a reason why they all so exactly agree in these synonims.

THE

THE LESSER GREEN WRASSE.

THE body of this species is entirely green, except that some of them have blueish spots about the belly; and the body is broader and thicker than that of others of this kind. The fins are somewhat spotted, and it has a purple tubercle near the vent. The painted wrasse, the black wrasse, the striped wrasse, and the variegated wrasse, are varieties of this species.

THE COOK.

THIS is a scaly fish, and does not grow to any great size. The back is purple and dark blue, and the belly yellow. They are sometimes taken in great plenty on the Cornish coasts.

THE PEARCH.

THE pearch was much esteemed by the Romans, and is now equally admired as a firm and delicate fish; and the Dutch are particularly fond of it when made into a dish called water souchy. This fish delights in deep holes, and gentle

tle streams ; it is extremely voracious, and a very eager biter : if an angler meets with a shoal of them, he is almost sure of taking every one. A full-grown perch is about twelve or fourteen inches long, though they are sometimes found to exceed sixteen ; but this is an extraordinary size. The body is deep, the scales very rough, and the back very much arched. The iris of the eye is of a yellow or gold colour ; the mouth is wide ; and the teeth are small, disposed in the jaws and on the roof of the mouth : the edges of the covers of the gills are serrated ; and on the lower end of the largest is a sharp spine. The colours of the perch are beautiful : the back and part of the sides are of a dark green, marked with five broad black bars, pointing downwards : the belly is white, tinged with red : the ventral fins are of a bright scarlet ; and the anal fins and the tail are of the same colour, but somewhat paler. The tail is a little forked.

It is said, that the pike will not attack this fish, being fearful of the spiny fins which the perch erects at the approach of the former. With respect to large fish, this opinion may be well founded ; but it is well known the small ones

ones are the most alluring bait that can be offered for the pike : it is probable the fins are then too soft to do him any injury.

The perch is very tenacious of life, and may be carried forty or fifty miles in dry straw, and yet survive the journey. The flesh of it is very wholesome and easy of digestion. The bones of the head are used in medicine, and, when pulverized, have the same virtue as other absorbent powders.

There is a very singular variety of perch in a lake called Llyn Raithlyn in Merionethshire, in which the lower part of the back-bone, next the tail, is strangely distorted.

The liver of the perch is usually thrown away, because it is apt to be measly. These fish spawn but once a year, and that is in the latter end of February. Some think the male is to be distinguished from the female by the fins being of a deeper red.

The most natural places for this fish are rivers, and yet it will live and even thrive when shut up in a pond. In the day-time it does not appear to be fond of any particular haunt, because it is almost continually roving about in quest of food, being, as already observed, a very voracious

voracious fish: and yet they are more likely to be found under the hollow of a bank, the piles of bridges, stumps of trees, or in a gentle stream of a middling depth. In the night, indeed, they retire to a place of repose, which, if you are so lucky as to discover, early in the morning, you have an excellent chance of taking them all, for they bite very boldly, generally herd together, and the taking of one does not intimidate the rest from falling into the same danger.

It will be to no purpose to angle for this fish before the mulberry-tree begins to bud; that is, before the spring is so far advanced as to put the fruit out of danger of being killed by nipping frosts, and for the same reason he always bites best in warm weather; yet, in the very midst of summer, he is soonest taken in cool, cloudy, and windy weather, and you may angle for him any time of the day, but you will be more likely to succeed from seven to ten in the morning, and from two till sunset in the afternoon, or later. In angling for pearch you need not continue long in the same place, for they usually bite as soon as the bait drops in; you ought to angle at or near the bottom, constantly raising your

B

bait

bait almost to the top, letting it drop gently again. The dog or flag-worm is an excellent bait.

The most likely baits are worms, minnows, and small frogs; but the most sure killing is the brandling worm, two upon the hook at a time, well scoured in moss, unless it be in the Mole, and some other rivers that run into the Thames, where minnows are scarce. But they are not very nice in the choice of their feed, and have frequently been caught with a fly in fishing for trout; and sometimes a brace at a time have been caught in angling for gudgeons with two hooks baited with red-worms. They will take their own gills very well. They take the bait best within a foot of the ground, and swallow it instantly, because they have the largest mouth, in proportion to their size, of any other fish. However, when you fish with a minnow or frog, they should have a little more time when you strike, than when you bait with a worm.

The pearch struggles hard for his life, and consequently yields the angler much diversion: when a pearch is pursued by the pike, he sets up his prickly fins, and often saves himself from being swallow-
ed.

ed. If you find that you have a bite from a large one, give him a little time to gorge the bait; but if it is a small one, you may strike instantly, especially if your bait be a brandling. He will bite at a worm, a minnow, or a little frog; of which you may find many in hay-time: of worms, the lob-worm, or the brandling, is taken to be the best, being well scoured in moss or fennel; and the worm that lies under cow-dung with a blueish tail. He will also take the red-worm and the dew-worm.

When the pearch bites, be sure you give him time enough to pouch the hook, for scarce any angler ever gave him too much. Some, in angling for pearch, will suffer their bait to touch the ground, especially when they fish with a worm. The turning of the water, or eddy, in a good gravel-scour, is an excellent place for sport. Your tackle should be strong, because, in fishing for pearch, pikes are often taken. Bait the ground over night with lob-worms cut in pieces.

The following directions in angling for pearch with a worm, may be worth observing. In March use the red worm at the bottom. In April the oak-worm, a young frog with its feet cut off, or a

red-snail. In May the dock-worm, or the bait that breeds on the osier-leaf, the oak-leaf, and the hawthorn. In June the red-worm with the head cut off, and a cod-bait put before it, or the dor. In July, the large grasshopper, or dunghill-grub: in August, and the following months, red-worms, or brandlings; at any time two or three gentles.

The pearch has been often fished for with two hooks and a live minnow with good success. The hooks have been tied to silk, one of which is put through the upper jaw, and the other through the middle of the back. When you bait with a frog, thrust the hook through its leg near the thigh, and when you throw it into the water, keep it from the shore as much as possible, for it will be for making thither as fast as it can.

As the pearch generally swallows the bait, and as it is difficult to get the hook out of his entrails without breaking the line, it will be necessary to carry an instrument in your pocket, which is called a gorge. It may be made of iron, or wood, about six inches long, and half an inch thick, with a hollow at the extremity. This hollow end you are to thrust down the throat of the fish till you feel the

the hook, at the same time keeping your line strait, lest the hook should catch again; when you have disengaged it with this instrument, you may draw them both out carefully together.

Ausonius, says Lemery *, reckons the pearl of the number of those fishes that have a delicious taste. It may be said, in general, that the pearl has but few gross humours; that it produces many good effects, and but a few bad ones: and the reason is, because this fish lives generally, and out of choice, in pure, clear, and rapid waters, rather than in those that are muddy, and run slowly. Moreover, it feeds upon good food, and is very active, which, also, contributes to make it more delicious and wholesome. It is nourishing, and affords good food, because it contains many balsamic parts, and most pure juice. It is, also, easy of digestion, when middle-aged; for then it is of a middling consistence: when, on the contrary, it is too young, or too old, it is soft and viscous, or else hard, like leather.

* Lemery on Foods.

THE BASS.

THE bass is a strong, active, and voracious fish. It is frequently called the wolf-fish, on account of its voracity. It will grow to the weight of fifteen pounds, and its shape resembles that of a trout, except that it has a thicker head. The mouth is large: the teeth, which are situated in the jaws, are very small. In the roof of the mouth is a triangular rough space, and near the gullet there are two others of a roundish form. The scales are of a middling size, thick set, and adhere closely to the skin. It has thorns or prickles about its head; and the eyes are large, with an iris of a silver colour. The back is dusky, tinged with blue, and the belly is white. In young fish the space above the side-line is marked with small black spots, which gradually disappear as it advances. The bass is esteemed a very delicate fish, and extremely wholesome. It is an inhabitant of the sea, and has never been found in our fresh-water streams.

THE

THE RUFF.

THIS fish resembles the perch, but it slenderer and smaller, seldom exceeding six inches in length: the body is covered with rough compact scales, from whence it has its English name. The back and sides are of a dirty green, the latter inclining to yellow; but both spotted with black. About the covers of the gills it is of a shining gold colour; whence it is sometimes called the gilded perch. It is gregarious, assembling in large shoals, and keeping in the deepest part of the water. The first rays of the dorsal fin, like those of the perch, are strong, sharp, and spiny; the others soft. The ruff is a river fish.

THE STICKLEBACK.

THESE are common in many of our rivers, and are found in vast quantities in the Fens of Lincolnshire, and some of the rivers that creep out of them. Once in seven or eight years, such amazing quantities are found in the Welland, near Spalding, that they are used to manure the land. We are credibly informed,

ed, that a man employed by a farmer, got near four shillings a day, for a considerable time, by selling them at an half-penny per bushel *. They are supposed to be the multitudes that have been washed out of the Fens by the floods of several years, and collected in some deep hole, till, overcharged with numbers, they are periodically obliged to attempt a change of place. This fish has only one fin on the back, with three distinct spines or prickles placed before it, which it can raise or depress at pleasure: the eyes are large, the belly prominent. The mouth is furnished with very small teeth; and the upper jaw is somewhat longer than the lower. The tail consists of twelve rays, and is even at the end. The colour of the back and sides is an olive green, and that of the belly is white.

There is a species of the stickleback which has ten spines or prickles, and is a smaller fish than the above; and another that has fifteen spines, which grows to the length of six inches. The latter inhabits the sea, and is sometimes called the sea-stickleback.

* British Zoology, vcl. iii. p. 217.

THE MACKREL.

THE mackrel was greatly esteemed by the Romans, because it furnished the precious *garum*, a kind of pickle that gave a high relish to their sauces. It is a summer fish of passage that visits the British coasts in immense shoals. It is usually from a foot, to a foot and an half in length, and seldom exceeds two pounds in weight.

The mackrel is a most beautiful fish when alive, as nothing can then exceed its brilliancy of colour; but it is greatly impaired by death, though it continues to merit the appellation of a beautiful fish. The body is long, thick, and fleshy, but very small and slender towards the tail. It is not entirely destitute of scales, but what it has are extremely thin and small. The colour of the back and sides is a fine green, varied with blue, marked with black lines pointing downwards; beneath the line, the sides and belly are of a silvery colour: the tail is broad and forked, and appears to be almost separated into two distinct fins. The nose is taper and sharp-pointed; the jaws are of an equal length, and

and furnished with teeth, which are small and numerous: the eyes are large, the tongue sharp, and the nostrils small and round. It is a fish of prey. When just taken, the flesh of a mackrel is delicate food, and it is esteemed even after it is brought up to London. Those who have tasted mackrel perfectly fresh, know how much they are superior to those which have been taken two or three days.

They have a method in Cornwall of pickling and salting mackrel, where it proves a great relief to the poor during winter. They are recommended for the Jaundice, and obstructions of the liver. This fish is much used in England, but, as we have already observed, only for a certain season of the year, after which it disappears; but in some countries they have it at all seasons.

It is nourishing food, and reckoned to be of a dissolving nature; but is heating and not reckoned wholesome, producing viscous and gross juices, and is not easy of digestion. It contains much oil, volatile salt, and phlegm. Bellonius blames those who boil a mackrel, and says it should be roasted, and seasoned with such things as promote digestion. The roasting certainly divests it more of its viscous and gross

gross juices. It agrees, in the spring and summer, with young people of a healthy constitution, who have a good stomach*.

Mackrel are found in large shoals in many parts of the ocean, but especially on the coasts of France and England. They enter the English channel in April, and take their course through the streights of Dover, insomuch that in June they advance as far as Cornwall, Sussex, Kent, Normandy, and Picardy.

They are taken either with the angle or with nets. When they are angled for, it must be out of a boat or smack, or a ship that lies at anchor. The best bait for them is a bit of herring put upon a strong hook; but when this is wanting, a shrimp, or a bit of any other fish will do, or even a piece of scarlet cloth; for they bite so freely there is almost a certainty of having sport; when you have taken one, a bit of their own flesh will serve for a bait. There is no occasion to be curious about your tackle, for you may even fish without a rod, and with several hooks at a time. In the West of England they fish for them with nets, near the shore, in the following manner: one man fixes a pole into the sand near the sea, to which

* Lemery on Foods.

he fastens one end of a long net. Another in a boat takes the other end of the net in his boat, and rows round in a circuit as far as the length of the net will permit, and then back towards the shore; when his boat turns round he steps into the water, and taking the cord of the net with him, drags the net towards the shore; then upon a signal given, both the men draw the net out of the sea, and by this method often catch three or four hundred fish; they are immediately carried away by horses, which wait for that purpose. The quantity of mackrel sometimes taken upon that coast is almost incredible; and then they are so cheap that they are not worth carrying away.

The flesh of a mackrel is very good when fresh, especially, if they are dressed when just taken out of the water, and there is such a difference between them and those that are brought to London, that it is not to be conceived by any that have not tried. However, they are not to be despised, even when they are well cured by pickling, and put up into barrels.

There are two ways of pickling them; the first is, by opening and gutting them, and filling their bellies with salt, cramming

it

it as hard in as possible with a stick ; which done, they range them in strata, or rows, at the bottom of the vessel, strewing salt between the layers. In the second method, they put them immediately into tubs of brine, made of fresh water and salt, and let them steep so long, till they think they have imbibed salt enough to make them keep ; after this, they take them out and barrel them up, taking care to press them down as close as possible.

THE TUNNY.

THIS is also called the Spanish mackerel. The form of the tunny, however, is less elegant than that of the mackerel, being rather thicker in the middle. The colour of the upper part of the body is dusky, varied with blue and green, and the sides and belly are silvery. They grow to a large size, sometimes being found of upwards of a hundred weight. They are fish of passage, and ramble from one part of the sea to another, at a considerable distance. In the months of September and October they quit the ocean, and pass through the straits of Gibraltar, into the Mediterranean sea, towards the Levant. They make a great article

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of provision in the adjacent kingdoms. Amazing quantities of them are taken in nets, for they come in vast shoals, keeping along the shores. They are not common in our seas, but are sometimes taken on the coast of Cornwall, with their stomachs full of pilchards. The flesh of the tunny, though not very delicate, is said to be tolerable food when properly cooked.

THE SCAD.

THIS is called the horse-mackrel by the inhabitants of London: it resembles the common mackrel in colour, shape, and flavour; but it is smaller, and the body is thinner. The head, and the upper part of the body are variegated with green and blue, and the belly is silvery. The scales are very large and thin: the lower half of the body is quadrangular, and marked on each side with a row of thick strong scales, prominent in the middle, and extending to the tail. It is taken on the coast of Cornwall, and many other places.

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THE GREY GURNARD.

THE colour of the back and tail of this fish is of a deep grey, covered with small scales, and spotted with yellow or white. The head is very large, covered with bony plates which have prickles on them. The snout terminates in two horns; the mouth is large; and the jaws, the roof of the mouth, and the base of the tongue, are armed with very small rough teeth. The body gradually becomes smaller from the head to the tail, and it has a furrow in the middle of the back, armed on both sides with a row of bony thorns, from which the fins arise. The flesh of the grey gurnard is firm, and has a good flavour.

The red gurnard, or rocket, resembles the former, but differs in size, seldom exceeding twelve inches in length: the head is less; the body and fins are more red, and the covers of the gills are engraved with streaks or rays, proceeding, as it were, from a center.

THE P I P E R.

THE piper is of the same colour as the red gurnard, except that it has a

C 2 yellow-

yellowish head. The snout is divided into two broad horns, each terminated with three spines or prickles. The spines on the back are larger and longer than those in other fish of this kind. The nostrils are very minute; the eyes large; the lower jaw much shorter than the upper; and the teeth very minute in both. This fish is found on the Western coast, at all seasons of the year, and is esteemed a great delicacy. It is called the piper, from the noise it makes. They are often seen to weigh three or four pounds, and to measure from twenty to twenty-four inches.

THE T U B F I S H.

THE form of the tub fish is more slender than that of the piper. The pupil of the eye is green, and on the inner corner of each are two small spines. But it is principally distinguished from the other species, by the breadth and colours of the pectoral fins, which are very broad, and of a palish green, most beautifully edged, and spotted with rich deep blue. The back is of a greenish cast; the sides are tinged with red; and the belly is white.

white. These fish are often taken on the coast of Cornwall.

THE LOACH.

THIS is also called the groundling: it is found in several of our brooks or small rivers, where it usually keeps at the bottom on the gravel, whence it owes its second name. It is frequent on the stream near Amesbury, in Wiltshire, where the sportsmen swallow it down alive in a glass of white wine, and suppose it an excellent remedy in consumptive cases. In shape and colour it resembles a gudgeon, but is smaller and shorter. The body is soft and slippery, and his tail broad, but not forked; and there are few or no scales. The colour of the head, back, and sides is white in some, and in others of a dirty yellow, very elegantly marked with large spots, consisting of numberless minute black spots. On the upper jaw there are three pair of barbs, one at each corner of the mouth, and two near the end of the snout. The eyes are small, and have their iris yellow. The flesh is extremely tender and delicate.

THE SALMON.

THIS is a Northern fish, being unknown in the Mediterranean sea, and other warm climates; it is found in France, in some of the rivers that empty themselves into the ocean; and North as far as Greenland. In several countries they are a great article of commerce, being cured different ways, by salting, pickling, and drying: there are stationary fisheries for them in Iceland, Norway, and the Baltic; but the greatest are at Colraine, in Ireland; and at Berwick, in Great Britain. The salmon was known among the Romans; and Pliny speaks of it as a fish found in the rivers of Aquitaine.

It has different names, according to its different ages: those which are taken in the river Ribble, in Yorkshire, are in the first year called smelts, in the second, sprods, in the third, morts, in the fourth, forktails, in the fifth, half-fish, and in the sixth, when they are thought to have attained their proper growth, they are deemed worthy of the name of salmons. In all parts of Europe the size of this fish

fish is nearly the same, and the largest weight from thirty to forty pounds.

The salmon is a beautiful fish; the body is longish, covered with small thin scales; the head is small in proportion to the body, and has a sharp snout: the tail is forked. The back is of a bluish colour; and the other parts are generally white, intermixed with blackish or reddish spots, placed in a very agreeable manner. The female may be distinguished from the male, by having a longer and more hooked snout, in having scales that are not so bright, and also in having its body speckled all over with dark brown spots. The belly is also flatter, and not so red.

The excrecence growing from the lower jaw of the male, which is a bony gristle like the beak of an hawk, is a defence provided by nature, against such fish as would devour their spawn: it grows to the length of about two inches, and falls off when the fish returns to the sea. The salmon is likewise more spotted in fresh water than in the sea: the teeth are small in proportion to its body; and the gills are quadruple, with a broad cover full of red spots. The flesh, when fresh killed, is not so red as when it is boiled

boiled or salted : it is tender, luscious, and flaky, and soon satisfies ; it is generally preferred to that of other fish. It grows more insipid about the time of spawning, and loses much of its lively colour.

The salmon is indeed so universally known, that a minute description is unnecessary. They are cured in the following manner : they are split, and rubbed with fine salt, and after lying in pickle for six weeks, they are packed up with layers of coarse brown Spanish salt in casks, six of which make a ton. These are exported to Leghorn and Venice, at the price of twelve or thirteen pounds per ton ; though they were formerly sold at a much greater price.

The salmon lives both in the fresh and salt waters ; quitting the sea at certain seasons in order to deposit its spawn in security, in the gravelly beds of rivers remote from their mouths. Salmons are often taken in the Rhine, as high up as Basil ; they gain the sources of the Lapland rivers, in spite of their rapid courses, and surpass the perpendicular falls of Leixlip, Kennerth, and Pont Aberglastyn.

This fish lives several years, and may be kept a long time out of the water before

fore it dies. The best salmon is well fed, large, of a middling age, tender, short, reddish, and taken in fine clear and running water. It is tender, short and savoury, and abounds with volatile salt, and oily and balsamic principles, which render it nourishing, strengthening and invigorating; it is diuretic, pectoral and restorative; but if eat immoderately, being very fat, it causes reachings and indigestions; and if too old, it is dry, hard, and heavy upon the stomach.

The salmon-fishery was an article of so much importance, that so early as the 13th of Edward the First, an act was passed to prohibit the capture of the salmon, from the nativity of our Lord to St. Martin's day, in the waters of the Humber, Owse, Trent, Done, Arre, Derwent, Wharfe, Nid, Yore, Swale, and Tees; and successive monarchs have provided for the security of the fish in other rivers.

The smelts, or fry of salmon, leave the Mersey about May or June, and then weigh about two ounces a-piece: they return about August or September, and weigh from one pound and an half to two pounds. Their greatest magnitude is much the same in most parts of Europe,

Europe, and when they are largest, they weigh from thirty-six to fifty-four pounds; one of this last weight being caught at Lachford Causey, in the year 1763.

Salmon ought to be kept a few days before it is dressed, for which reason it is better when it reaches London, than when caught in the Mersey. About the time of spawning, it grows more insipid, and loses its lively colour. Some begin to be out of season presently after the summer solstice, and others soon after, which may be known by their falling away, their losing their beautiful spots, and by their colour; insomuch, that when they are quite out of season, they look like a fish of a different species, and are then called knippers.

The salmon chuses the river for his abode about six months in the year; they enter the fresh water about December or January, and are sometimes caught in the Mersey, in November, February, or March, where they continue till the autumnal season, at which time they cast their spawn, and soon after return to the sea. But directly the contrary of this is reported of those in the river Ex in Devonshire, and the river Wye and Usk in Monmouthshire, where the salmon are said

said to be in season during the other six months.

When spawning time arrives, the female seeks a proper place, in a gravelly bottom, where she has been observed to work with her head, tail, belly, and sides, till she has formed a kind of *nidus*, of the same dimensions with herself; which done, she discharges her spawn, and retires; then the male, or milter, advances: this is no sooner over, but the female returns to the male, when they use their joint endeavours to cover their brood with the gravel, in which they work with their noses like hogs: after this they return to the deeps to recover their strength, which they do in about twenty days. About this time this fish is of very little value; but to prevent their destruction, the laws of the land inflict a penalty on those who shall destroy salmon between the 11th of August and 22d of November; but it would be better for the community, if it was the 11th of September and the 22d of December.

There is nothing relative to this fish, which has been more talked of, than its agility in leaping over the obstacles which oppose its passage either to or from the sea;

sea ; for they are frequently seen to throw themselves up cataracts and precipices many yards high. They sometimes make several essays before they can gain their point, and when they have done it, it has been often to their own destruction, for they have leapt into baskets placed on purpose to catch them. There is a remarkable cataract on the river Tivy in Pembrokeshire, where people often stand wondering at the strength and agility which they exercise to get out of the sea into the river ; on which account it is known in those parts by the name of the salmon-leap. On the river Wear, near the city of Durham, there is another of this kind, which is supposed to be the best in England : there is another at Old Aberdeen in Scotland, where such great plenty of Salmon has been caught, that they have been deemed the principal trade of the place. Whenever their passage to the sea is intercepted by weirs, or any other contrivance, they soon grow sickly, lean, and languid ; and if they are caught in that condition, when they come to the table, they prove tasteless and insipid : in the second year they pine away and die. It is worth observation, that the salmon is not only desirous of returning

returning back to the rivers, but to that very river where it was spawned, as evidently appears by an experiment made by fishermen, and others, who have caught them when very small, and have run a small ribband, tape, or thread, through the tail-fin: by this mark they have been certain that they have retaken the same fish, at the same place, as they returned from the sea: by this means they have likewise discovered, that the salmon is of very quick growth, and considerably more so than any other fish.

The chief rivers in England that yield this excellent fish are the Thames, Severn, Mersey, Trent, Medway, Dee, Ex, Usk, Wye, Lon, Tyne, Werkington, Weaver, &c. However, our London markets are supplied soonest from the north, where they are not only more plentiful, but are in season before those of the southern rivers. The Mersey greatly abounds with salmon, which in the spring strive to get up that arm of the sea, and with difficulty evade the nets, which the fishermen spread to catch them before they get to Warrington-bridge, at which place the river becoming narrower, and the land-owners having an exclusive right, each proprietor,

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by his agents, catches salmon, which, in the whole, amounts to above one thousand pounds a year ; by which means the towns of Warrington, Manchester, and Stockport, are well supplied, and the overplus sent to London, by the stage-coaches ; or carried on horseback to Birmingham, and other inland towns. Thus having given a general account of the nature of the salmon, we shall now proceed to the method of taking him with the angle.

It is necessary to premise, that the salmon does not remain long in a place, but seems desirous of getting still nearer to the head of the spring. He does not lie near the bank-side, nor under the roots of trees, but swims in the deep and broad parts of the water, generally in the middle, and near the ground. But the salmon-smelts generally lie in the rough and the upper part of a gentle stream, and usually pretty near the middle in the months of April and May, and nearer the side earlier in the spring.

The most alluring bait for the salmon in the western islands of Scotland, is raw cockle taken out of the shell ; with this they fish at the bottom, using a running bullet. This method is practise

in the river Medway, in Kent, with success : let the cockle fall into a shallow, from which there is a gradual descent, into a deep hole. In most of the salmon rivers of France, they use prawns or muscles taken out of the shell. In the month of October, they go up the smaller rivers as far as they can to spawn. At that season of the year many salmon get high up the river Mersey, where some few are caught by angling : but the far greatest part of them are destroyed by poachers with spears, though the first are at that time of little or no value. Thus considerable damage is done to the breed of salmon, and it were to be wished, that the justices of the peace would a little more exert themselves, and enforce the laws to punish these offenders.

The most usual baits are lob-worms, small dace, gudgeons, bleaks, minnows, or two well-scoured dew-worms, which should be often varied, in order to suit the humour of this fickle fish ; as what he likes one day he will despise the next. Though it must be owned it is a very disagreeable circumstance to an angler, and which he often meets with to exercise his patience, to see the fish sporting on the surface of the water, and not be

able to tempt him with any of his baits. However he generally bites best about three in the afternoon, in May, June, and July, especially if the water happens to be clear, and there is a little breeze of wind stirring; but there will be still a greater probability of success if the wind and stream set contrary ways. There is a fly called the Horse-leech-fly, which he is very fond of; they are of various colours, have great heads, large bodies, very long tails; and two, some have three pair of wings; behind each pair of wings, whip the body about with gold or silver twist, or both, and do the same by the head; with this fly, fish at length, as for trout, and grayling; but if you dip, do it with two or three butterflies, of different colours, or with some of the most glaring small flies you can find. When you make use of the fly, let your hook be strong and large; but it would be better to have two well scoured lob-worms, as they have been found most successful in fishing at the bottom. In this case, let your hook be large, and armed with gimp; for though a salmon, when struck, seldom attempts to bite the line, yet, as you will be obliged to play the fish for some

some time, the line must rake against his teeth, and you will be in great danger of losing your prize without this precaution. Next to gimp are recommended the bristles of a Westphalia hog doubled; which yet are only preferable to ours on account of the length. If, therefore, you cannot easily procure the former, you may make use of our own, which being often lapped into the length of half a yard, have been found proof against the teeth of a jack, when trawling for that fish. Whenever you observe a salmon leap out of the water, you may safely conclude there is a deep hole not far off; and if the river is too broad for you to throw a fly, or if a contrary wind hinders you, then lay your ledger-bait as near the hole as you can, and you will probably meet with success, for he always chuses such places for retirement. If you bait with a dace, gudgeon, &c. then put on your swivel and reel, and make use of a large cork-float, with your live bait about mid-water.

For the salmon-fry, or scegger, called also a salmon-smelt, the properest baits are ant-flies, brandlings, earth-bobs, gentles, black and dun gnats, all coloured small hackles, and dub'd flies ac-

cording to the season ; when they rise at fly, and a little before they leave the river, they usually get together in large shoals, where you will see ten or a dozen rise at a time ; if you light of a shoal, you will never fail to have sport, as they rise very freely. You may use three or four hooks to one line, tied to single hairs. They are also frequently caught with the red-worm in fishing for gudgeons. The places where they are generally found are the scours near the deeps, or amongst wood or weeds. They always leave the Mersey in May or June. Two of them were, whilst small, put into a fish-pond, at Stockport, and took out again in three years, when they weighed five pounds.

The chief salmon fisheries in Europe, are along the coasts of England, Scotland and Ireland ; the fishing usually begins about the first of January, and ends the eleventh of August. It is performed with nets in the places where the rivers empty themselves into the sea, and along the sea-coasts thereabout ; because these fish are seen to crowd thither from all parts in search of fresh water. They also fish for them higher up in the rivers, sometimes with nets, and sometimes with

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locks or weirs made for that purpose with iron-gates: these gates are so contrived, that the fish in passing up the river can open them with their heads, but they are no sooner entered than the gates clap too, and prevent their return. Thus the salmon are inclosed as in a reservoir, where it is easy to take them.

Near Flixon in Lancashire, they fish for salmon in the night-time, by the light of torches, or kindled straw, which the fish mistaking for the day-light, make towards, and are struck with the spear, or taken with the net, which they lift up with a sudden jerk from the bottom, having laid it in the evening before opposite the place where the fire is kindled. In some parts of Scotland, it is said, they ride a fishing up the rivers, and when they espy them in the shallows, they shoot them with fire-arms. It is very common to dart salmon as they are endeavouring to get over the weirs.

When the fish are caught, they open them, take out the guts and gills, and salt them in large tubs made for that purpose, out of which they are taken before October; and are packed up in casks, from 300 to 450 pounds weight.

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The season for fishing in the Tweed, begins November the 30th, but the fisher-men work very little till after Christmas; it ends on Michaelmas day: but the corporation of Berwick, who are conservators of the river, indulge the fisher-men with a fortnight after that time, on account of the alteration of the style.

There are forty one considerable fisheries on the Tweed, extending upwards of about fourteen miles from the mouth, which are rented for near five thousand four hundred pounds per annum *. A misfortune attends this river, which requires a parliamentary remedy: there is no act of parliament for preserving the fish in it during the fence months, as there is in the case of many other British rivers. The Tweed being the boundary between England and Scotland, part of it belongs to the city of Berwick, and the whole north side (beginning about two miles from the town) is entirely Scotch property. From some disagreement between the parties, they refuse to unite for the preservation of the fish; and in some fisheries on the north side they continue killing salmon the whole

* British Zoology, vol. iii. p. 244.

winter,

winter, when the death of one fish is the destruction of thousands.

About the month of July, the capture in the Tweed is prodigious: in a good fishery a boat load of them are often taken at a time: upwards of seven hundred fish have been known to have been taken at one hawl; but from fifty to one hundred is no uncommon occurrence.

THE G R E Y.

IT differs but little from the Salmon in size, though it is very different in shape; being broader and thicker; and the tail not being forked. The body is all over speckled with ash-coloured or grey spots; from whence it derives its name. The flesh is preferable to that of salmon, and bears a much higher price. This fish has great strength and agility, making its way from the sea into the rivers with extreme swiftness; surmounting almost every obstacle with the greatest ease. This fish is therefore seldom taken, and consequently but little known. It does not ascend the fresh waters till August, which is the time of spawning.

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THE SALMON TROUT.

THIS fish is also called the bull trout, from the thickness and shortness of its head. It differs from the salmon in having the tail less forked; from the grey, in having a shorter and thicker head; and from both in being smaller, seldom exceeding twenty inches in length. Its flesh is white, and less delicate than that of the salmon and grey.

They delight to lie in deep holes, and usually shelter themselves under the root of a tree. When they watch for their prey, they generally chuse that side of the hole which is towards the stream, that they may the more readily catch whatever food the stream brings down. They will rise at an artificial fly like a salmon: but the best bait for them is a well scoured brandling, especially those that breed in a tanner's yard.

You may angle for them any time in a morning, and in the afternoon from five till night. They are in season all the summer. When you try to catch them, remember to keep out of sight, and let your line fall into the stream, without any lead, except one single shot, and then it will be carried gradually into

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the hole. When you have a bite you ought not to strike too eagerly ; they bite freely enough, and struggle hard for their lives. It is necessary to observe, that some give the name of salmon-trout to a young salmon, which has occasioned several to run into errors in treating of this fish. They have likewise in France a kind of pond-trout, which they call a salmon-trout, that grows to such a magnitude as to weigh above thirty pounds ; and in the Leman Lake near Geneva, there are some of this kind, that weigh fifty pounds.

THE T R O U T.

THE trout is a fish of excellent taste, and is covered with small scales, usually streaked with red. There are several species of this fish, which live in various places, and differ in colour and size. Some are found in deep and rapid rivers, others in lakes ; some are of a blackish colour, others reddish, and rather of a gold colour, and variously marked with spots of a purple or vermillion die ; but on the belly they have a yellowish cast.

This fish swims with much agility and swiftness, and is said on hearing thunder

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to be so astonished, as to become immovable. It feeds upon worms, slime, mud, insects, and small fishes, which it pursues with so much eagerness, from the bottom to the surface of the water, that it sometimes throws itself into the boats passing near it.

Trouts, besides being well tasted, produce good juice, because they are always in motion, feed upon good food, and usually swim in clear and running streams: Thus they acquire less gross and viscous humours, eat short, and are easily digested; but they soon putrefy and corrupt, and therefore should be eaten soon after they are brought out of the water.

The trout contains much oil, volatile salt, and phlegm; and agrees with any age and constitution. In summer it is most delicious, but in winter it is deprived of almost all the excellency of its taste. It may be boiled, fried, roasted, or baked; and some salt it for exportation.

There is a variety which is called in Latin *Thymallus*, a *Thymi Odore*, because it smells like thyme. It is delicious food, easy of digestion, has good juice, and so wholesome, that in some places they allow sick persons to eat it.

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Its shape resembles that of the common trout, and it, also, lives in clear and running waters: it feeds upon the same food, and in some countries is more valued for the goodness of its taste than the other sorts. Its fat is good to remove prints of the small-pox, deafness, noises of the ears, specks, and catarrhs of the eyes.

The trout is of a longish form, and resembles the salmon more than any other fish. The head is short and roundish, the nose blunt, the body thick, and the tail broad. The mouth is wide, and it has teeth, not only in the jaws, but on the palate and tongue. The eyes are large, with a reddish circle round the pupil; the rest of the iris being of a silver colour. The skin readily falls into wrinkles, and separates from the flesh. In the larger trouts, the back is of a dusky hue, and full of black spots, which in some are mixed with red. This fish has two fins on the back; that next the head is full of black spots, and the edge of that near the tail is of a vermillion colour. On the belly there are two pair, which are always either red or yellow.

It is surprizing that this common fish has escaped the notice of all the ancients,

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except Ausonius, who only celebrates it for its beauty; and that so delicate a species should be neglected at a time when the folly of the table was at its height; and that the epicures should overlook a fish that is found in great quantities in the lakes of their own neighbourhood, when they ransacked the universe for dainties. The milts of *Muranae* were brought from one place; the livers of *Scari* from another, and oysters even from so remote a spot as our *Sandwich*: but there was, and is now, a fashion in the article of good living.

The trout is a voracious fish, and affords excellent diversion to the angler. These fish shift their quarters to spawn, and, like the salmon, make up toward the heads of rivers to deposit their spawn. They delight in cool and small streams, which descend from rocky hills, and seem particularly fond of swimming against the course of the water. They are found in small rivers among the Alps, the waters of which are so cold that no other fish can accompany them.

Trouts are not in the highest season when they are fullest of spawn, for they are fattest, and have the most delicious taste in July and August. They begin

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however to be in season in March, and become so in some rivers much sooner than in others. In winter they are lean, sick, and unwholsome, breeding a kind of worm with a large head, which in some degree resembles a clove. At that time the beautiful spots disappear, and the lively colour of the belly becomes dusky and disagreeable. But, towards the latter end of March, he rouzes from his lethargy, rubs off his ill-bred foes against the gravelly bottoms, and soon after recovers his former strength and vigour. The flesh is drier and less tender than that of the salmon ; it is, however, esteemed the most agreeable of all those fish that reside continually in fresh water.

The Fordich trout seems to be of a different sort from the rest, because it is almost as large as a salmon, and lives nine months in the sea ; besides it is seldom caught with the angle, being supposed not to feed at all in fresh water ; and there seems to be a probable ground for this opinion, for when they are opened there is nothing found in their maw. Yet their return to the river is so very constant and punctual, that the fishermen know almost to a day when to ex-

pect them. When this fish is in full season, the flesh of it cuts white.

The usual baits for a trout are a worm, minnow, and fly, either natural or artificial. The proper worms are the brandling, two upon a hook, lob-worm, earth-worm, dung-worm and muggot, but especially the two first, and indeed, in fishing at the bottom, the lob-worm is preferable, and is most generally used.

This fish, as already observed, delights in the swiftest streams, at a stream-tail in spring and latter end of summer; in May he keeps the upper end, and on the shallows in summer, or at the tails of mills; he is particularly fond of a hole covered with boughs, and where the roots shoot down to the water's edge, where he can find a good hold; in such a place you may find the largest, and consequently you must angle for them near such places. When they watch for their prey, they generally shelter themselves under a bank, a large stone, or in the weeds, where they are often seen lurking entirely covered over except their heads. When they are discovered in this situation, go a little up the stream, and with great care and caution muddy the water, putting in your bait immediately in the muddy

muddy part ; then keeping yourself as far from the bank as you can, in order to be out of sight, follow your float, and expect success.

Trout may be taken in this manner, either with a minnow or two well-scoured lob-worms. When you use two worms, put the first on the hook with the head foremost, and then slipping it a little up the line to make room, put on the other with the tail foremost, after which draw the first down to it quite close. This is likewise a good bait when you angle in the dawn of day, or in the dusk of the evening, or even in the night when it is dark. In this case you must put no lead on your line, but throw your bait as gently as you can across the stream, and draw it softly to you on the top of the water. This is the best method of catching the oldest and largest trout, for they are very fearful and shy in the day-time, but in the night they are bold and undaunted ; and generally lying near the top of the water in expectation of meeting with food ; for if they see any thing in motion, let it be what it will, they will certainly follow it if it glides gently along. If you put the point of your hook in at the head of your first worm,

and out at the knot, and slip it a little way up the line, that you may bait the other the same, that so both tails may play, you will find it answer very well.

In angling for a large trout in muddy water, it requires some art in baiting your hook, suppose for instance the bait is a dew-worm, you must then thrust the hook in towards the tail, a little above the middle, and out again below the head, then draw him above the arming of the hook, or whipping, and put the point into the head of the worm, till it is very near the place where the point of the hook first came out, and so draw back the worm, or that part that was above the shank. This hook should be pretty large. A water-clearing after a flood, or dark, cloudy, and gloomy weather, when it is windy, is most favourable for worm fishing. In March, April, September, and a part of October, the warmest sun-shiny weather, and the middle of the day is best.

Some make a practice of fishing at the bottom in the dark, with a little bell fixed to the top of the rod, in such a manner, that when the trout takes the bait, the sound of the bell may give notice of the bite; but others think this method is

very precarious, because the least weed that touches your line as it comes down the stream will deceive you. The surest way is to hold your rod in your hand, for as the trout is a bold biter, you will easily perceive when he takes the bait: as soon as you have struck it, give it the but of your rod, for if you hold it the least upon a level, you are in danger of losing your line. There is a very excellent method; make a pair of wings of the feather of a land-rail, and point your rod with one or more cadis; your hook should be brisled, and the head of your cadis kept close to your wings, and angle with a rod about five yards, and a line about three; cast your wings and cadis up the stream, which will drive it down under the water towards the lower part of the hole; then draw it gently up the stream, a little irregular, shaking your rod, and in a few casts you will be sure to hook him, if there is one in the hole. You may angle the same way with two brandlings. If you use two cadis with your wings, run your hook in at the head, and out at the neck of the first, and quite through the other from the head to the tail; this is a much approved method for catching large trout.

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In angling with a fly, let your rod be rush-tapered, with a very slender top, that you may throw your fly with greater certainty and ease ; for if the top is too stiff, the fly will be soon whipped off. Your line should be three times the length of your rod. In this kind of angling, you should place yourself so that the wind may be upon your back, or at least you must chuse such a time and place, that the wind may blow down the stream, and then it will assist you in laying your fly upon the water, before your line touches it ; for if your line touch the water first, it will cause a rippling that will fright the fish away.

The cad-bait upon the point of the hook with the artificial fly is recommended. Or another way to angle with the cad-bait is on the water, as with a fly. It must stand on the shank of the hook as the artificial fly, (not come into the bend, or the fish will not value it, nor if you pull the blue gut out) and thus it is a most excellent bait for the trout. Where the river is not violently swift, you may place a very slender lead on the shank, and draw the cad-bait over it : raise it often from the bottom, and so let it sink again. By which means you will

find good sport, either in muddy or clear water. You may imitate the cad-bait, making the head of black silk, and the body of yellow wax, or of shamoy. When the fish appear at the top, they will take the oak-worm upon the water, rather than under it, or than the fly itself; and it is more desired by them. After you have dibbed with these flies on the surface till they are dead, cut off their wings, and fish with them at mid-water, or a little lower. You may dib for a trout also with a fly or grasshopper, as you do for a chub, under a bush, by the bank side, with a strong rod, and a short strong line. If they do not rise after half a dozen trials, there are none in the stream, or they dislike your bait.

You need not be very particular in the choice of your flies, for a trout is not difficult, nor yet very curious about the season, for some have angled successfully with an artificial May-fly in August. The time of the trout's biting is from sun-rising till near eleven in the morning, and from two in the afternoon till sun-set; and yet the most certain times, are nine in the morning and three in the afternoon, especially if the wind be at south, for when it blows from that point it is most favour-

favourable to the angler. At this time if you angle with a loach about a quarter of a yard deep in the stream, you are sure of catching fish. If you have not this bait, a bull-head, with the gill-fins cut off, may prove a good bait, or a minnow for want of the others. And as the trout may be deceived by almost any fly at the top, so he seldom refuses any worm at the bottom, or small fish in the middle; for which reason he is sometimes caught when trolling for jack.

You may likewise dib for trout in the same manner as you do for chub, only let your fly drop as gently into the water as possible, and keep it easily gliding along the surface; let it sink a little, and suddenly raise it again, with a strong rod, and a short strong line; but be careful to keep out of sight, for the shadow of your rod, or the flight of a bird over the river, will make them fly almost as swift as the bird, and it will be some minutes before they will shew themselves again. You will find good sport if you dib with the green snake-fly whilst alive, which is thus practicable: collect a quantity of them into a long draw-box, with holes in the cover to give them air, where also they will continue fresh and vigorous a

night

night or more; take them out from thence by the wings, and bait them thus upon the hook: first take one, for it is common to fish with two of them at a time, and putting the point of the hook into the thickest part of the body under one of the wings, run it directly thro', and out at the other side, leaving him spitted across upon the hook, and then taking the other, put it on after the same manner, but with its head the contrary way; in which posture they will live upon the hook, and play with their wings for a quarter of an hour, or more: but you must be careful to keep their wings dry; and also that your fingers be not wet when you take them out to bait them; for then your bait will be spoiled.

With the stone-fly you may likewise dib, but with this variation: the green-drake is common both to stream and still, and to all hours of the day, this is seldom dibbed with but in the streams, (for in a whistling wind a made fly in the deep is better,) but observe, that morning is the time: but much better towards eight, nine, ten, or eleven o'clock at night, at which time also the best fish rise, and the later the better,
provided

provided you can see your fly, and when you cannot, a made fly will answer the purpose.

Trouts are taken in some parts of England by tickling them; there was a person who was very expert in that art; he would grope for them in their lurking-places, and gently tickle their sides, which they seemed to be delighted with, till, at length, approaching their gills, he held them fast, and made them prisoners; and it is observed in the Philosophical Transactions, that carp are sometimes taken by the same way. Great quantities are also taken with the spear and lanp.

THE SAMLET.

THIS is the least of the trout kind, and is frequently found in the Wye, in the upper part of the Severn, and the rivers that run into it, in the north of England, and in Wales. It has a great resemblance to the trout, but is much smaller, seldom exceeding six or seven inches in length, and an inch and an half in breadth. It has fewer spots than the trout, and those which it has are not so bright. The samlet is whiter, and





Charr

and has a more forked tail ; the sides are not so yellow under the spots ; and the lateral lines in a trout are larger and more red than in the samlet. The samlet has transverse spaces near the lines of a blueish colour, which the trout has not. Some imagine the samlet to be the fry of the salmon, but they are certainly mistaken.

THE CHARR, OR RED CHARR.

THE charr is an inhabitant of the lakes of the north, and of those of the mountainous parts of Europe. It is found in great abundance in the cold lakes on the summits of the Lapland Alps, and is almost the only fish that is met with in any plenty in those regions. Very few lakes in our island produce this fish, and even those in no great plenty. It is found in Winander-mere, in Westmoreland ; and in *Llyn Quelllyn*, near the foot of Snowdon, and in certain lakes in Merionethshire. It is also found in Scotland, in *Loch Inah*, and other neighbouring lakes.

The body of the charr is longer and more slender than that of the trout, and the back is of an olive colour, speckled

F with

with whitish spots. In general the belly is red, though it is sometimes white, especially in the spawners: the scales are very small, and the lateral lines straight: the mouth is wide, and the jaws are nearly equal: the lower part of the fins are of a vermillion die, and the gills are quadruple. The charr has teeth both in the jaws and on the tongue; and in the upper jaw it has a double row. The flesh is softer and more tender than that of a trout. The charr is in very high esteem, and exceeding scarce. The inhabitants in the neighbourhood of Winander-mere make a practice of potting charrs, which are usually sent as presents to remote friends; but they cannot be taken in sufficient quantities for sale even at an unreasonable price.

THE GELT-CHAR R.

THE gelt or barren charr, is one that has not spawned the preceding season, and on that account is reckoned to be in the greatest perfection. It is more slender than the red charr, as being without spawn. The back is of a glossy hue; the sides silvery, mixed with blue, and

and spotted with pale red : the sides of the belly are of a pale red, and the bottom white. This is found only in those lakes, which are also inhabited by the red charr.

THE GRAYLING, OR UMBRÆ.

THIS is a voracious fish, and takes a bait very eagerly. It swims rapidly, and disappears like the transient passage of a shadow, from whence it probably derived the name of umbra.

“ The *umbra* swift escapes the quickest
“ eye *.”

It is a fish of an elegant form : the body is longer and flatter than that of a trout, and seldom exceeds eighteen inches in length. The head is dusky : the covers of the gills of a glossy green : the back and sides are of a fine silvery grey, from whence it has its name of grayling ; though they seem to glitter with spangles of gold, and are marked with black spots irregularly placed. The top of the back fin is red, and the lower part of a blueish purple : the fins of the belly are blueish, spotted with black.

* *Æmæn. Acad. iv. 159.*

The lips are rough like a file, the tongue smooth, and the gills quadruple.

The grayling haunts clear and rapid streams; particularly those that flow through mountainous countries. It is found in the Hodder, the Dove, the Trent, the Derwent, the Wye, and the Lug. It is also very common in Lapland. It is a firm, good, and wholesome fish. It may be eaten all the year, but in December it is in the highest season.

THE S M E L T.

S M E L T S are usually about six inches long, and near an inch in breadth, but they are sometimes found of the length of twelve inches; they have a very peculiar scent, from whence their English name is derived—*smelt*, that is, *smell it*. People greatly disagree respecting the scent of this fish; some assert it flavours of the violet, others of the cucumber: we acknowledge that we are of the latter opinion. The Germans however distinguish it by the delicate title of *stinck-fisch*. The smelt is the least of these kind of fish, and is of a very beautiful form and colour: the head is so transparent, that all the lobes of the brain

may

may be plainly and distinctly seen ; and the skin in general is so thin, that, with a good microscope, the blood may be observed to circulate. The scales are small, and fall off with the slightest touch. The back is of a dusky colour, but the belly and sides shine like silver : the tail consists of nineteen rays, and is forked. The iris of the eye is silvery ; the pupil of a full black ; and the under jaw is the longest. It has four large teeth in the front of the upper jaw, and several small ones in the sides of both. It has two rows of teeth in the roof of the mouth ; and two others of large teeth on the tongue.

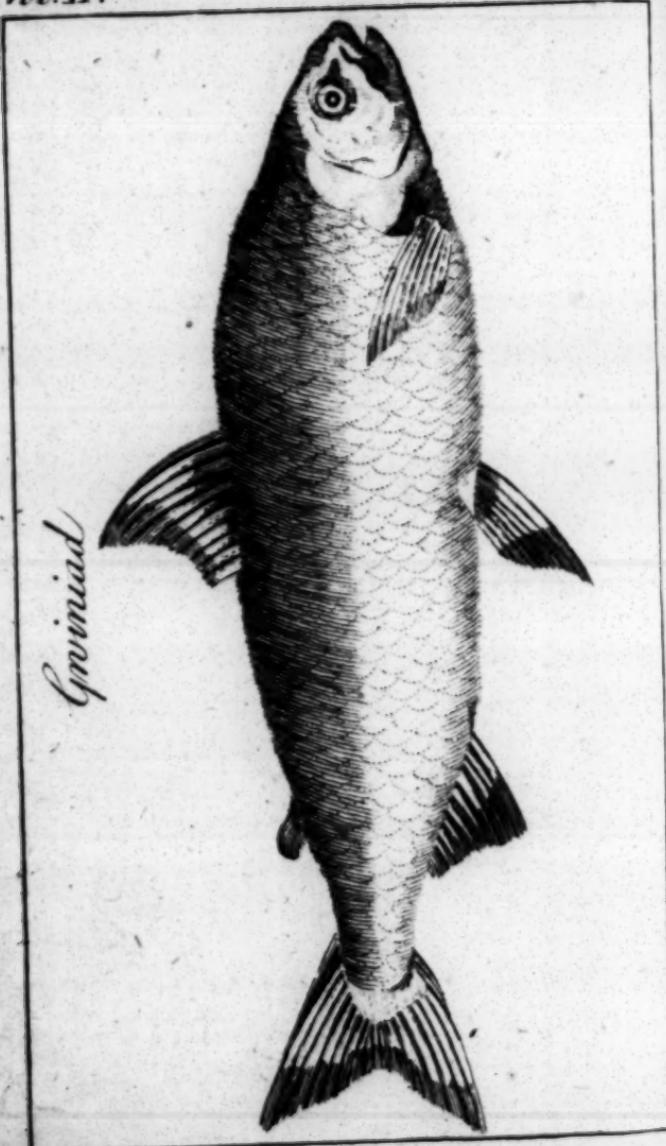
Smelts inhabit the seas that wash the lands of Great Britain and Ireland the whole year, and never go very remote from shore, except when they ascend the rivers. It has been observed, that they are seen in rivers some months before they spawn, but immediately afterwards they all return to the salt water, and never appear again in the fresh streams till the next season. The flesh of the smelt is soft and tender, and of a delicate taste ; and is therefore in very high esteem. They are frequently served up to table as a kind of garnish to large fish ; and

they ought, in that case, to be considered only as garnish, for they are seldom fit to be eaten ; the cook generally keeping them so long before the fire that they become dry, insipid, and tasteless.

Less than twenty years ago, smelts were so scarce and valuable as sometimes to sell for four or five pounds the hundred ; but they are now to be purchased, in general, for eight, ten, or twelve shillings per hundred.

In March, if the spring be mild, prodigious quantities of this delicate fish make their appearance in the river Mersey, which often seems of a greenish colour, from the vast bodies of smelts which then swim about. At this time, every boat, every fisherman, and every net, is employed, and even the boys with cabbage-nets catch these fish, which are double the size of those usually caught in the Thames ; sometimes the baskets, pails, boats, and the very banks, are filled with sparlings, as they are called in Cheshire, where, from the great plenty, they are frequently sold at four-pence a score. Some of these fish have been caught in Rostern Mere, and other still waters, where the fishermen have washed the spawn from their nets ; but these fish appear





appear lean; neither do they breed in ponds.

The best way of angling for them is with a pater-noster line, with a small shot to sink it under water: your baits should be earth-bobs, gentles well scour'd, paste, or the fish itself, cut into small bits sufficient to cover your hook; they are seldom caught with angling, as they stay about Warrington but a little time after they have spawned, but they are caught in the salt part of the river all the year round with nets.

THE SOUTHAMPTON SMELT.

THIS agrees with the common kind, in having two back fins, in colour, in the transparency of the back and head, &c. but has nothing of the violet or cucumber smell. It swarms in the sea about Southampton, and is the common bait for whiting, mackrel, flat-fish, &c.

THE GUINIAD.

THE guiniad is an inhabitant of several of the lakes of the Alpine parts of Europe. It is also found in Scotland, Ireland, and Wales, particularly in Pem-ble-

ble-meer, a lake in Merionethshire. The shape of this fish is not much unlike that of the salmon, the usual length is about twelve or thirteen inches, and its greatest depth about three inches. The back is dusky, and the belly white. The head is small, smooth, and of a light blue on the top, speckled with darker spots, and the ends of all the fins are of a dark blue: the eyes are very large, and the pupil of a deep blue: the mouth is small and toothless; and the covers of the gills are silvery, powdered with black. The British word guiniad, which signifies whiting, was given it on account of the whiteness of its body. They are in season in the summer, and, though the fish is white, it has the flavour of that of the trout: it is however much higher in esteem, because it is a greater rarity. The Scotch have a tradition, that it was first introduced there by the beauteous queen, their unhappy Mary Stuart. These fish approach the shores in immense quantities in spring and in summer, and, in many places, prove a great relief to the poor.

THE PIKE.

THE pike has a roundish oblong body, with a flat head, and square back: the snout is very prominent, and the lower jaw is somewhat longer than the upper. The mouth is very wide, and the teeth are very sharp, disposed only in the front of the upper jaw; but in both sides of the lower jaw, in the roof of the mouth, and sometimes on the tongue: the eyes are small, and the tail is forked. The body is covered with small thick scales, which are moistened on the edges with a kind of slime that has a greenish cast; and the younger the fish is, the greener he appears. The back and sides, when turned towards the light, appear to have somewhat of a golden hue: the sides are spotted with yellow, and the belly is white. It has dusky spots, and reddish lines on the tail, especially towards the corners.

The pike will swallow other fish which are almost as large as itself; not even excepting those of their own kind. Innumerable are the instances mentioned by authors of the voracity of this fish. Mr. Pennant informs us of a pike being choaked,

choaked, by attempting to swallow one of its own species, that proved too large a morsel. It will devour the water-rat, and draw down the young ducks as they are swimming on the water. At lord Gower's canal at Trentham, a pike seized the head of a swan, as it was feeding under water, and gorged so much of it as killed them both. Gesner indeed relates an instance that borders a little on the marvellous *. He tells us, that a famished pike on the Rhine seized on the lips of a mule that was brought to water, and that the beast drew the fish out before it could disengage itself.

The longevity of the pike is very remarkable. *Rzaczynski* tells us of one that was ninety years of age †; and Gesner says, that in 1497 a pike was taken near Hailbrun, in Suabia, with a brazen ring affixed to it, on which were the following words in Greek characters : “ I am the fish which was first “ of all put into this lake by the hands “ of the governour of the universe, FRE-“ DERICK the Second, the 5th of Oc-“ tober 1230 : ” supposing this to be a fact, the fish was at least two hundred and sixty-seven years of age.

* Gesner pisc. 503. † Hist. nat. Polonizæ, 152.
Their

Their usual time of spawning is in March, and sometimes sooner if the spring is forward. They are exceedingly prolific, forty-eight thousand eggs having been found in one of their roes. They are in season all the year, except in spawning time, and about six weeks after it. The flesh is firm, white and sweet; but if the fish exceeds ten or twelve pounds in weight, it has a rankish flavour.

The pike is good and nourishing food, and agrees at all times, but especially in winter, with any age and constitution. Some authors pretend, that it is hard of digestion, heavy in the stomach, and always affords bad juice; but these qualities are only applicable to such as live in ponds, and marshy places, and feed upon slime and mud. Jovius thinks the pike has but an ordinary taste, and Aulonius does not esteem it; but its taste differs according to the country in which it is bred. The roe provokes vomiting, and sometimes purges violently. The pike contains much oil, and volatile salt.

Mr. Lee, of Thelwell in Cheshire, had stored a pit; but when he laded it, in expectation of catching a great number of fish, to his disappointment he found

found only a large lean pike, which had devoured all the store-fish, and had in his stomach a water-wagtail, and a young thrrostle, which were supposed to have been hopping on a twig near the water.

A pike catched in Barn-meer (a large standing water in Cheshire,) was an ell long, and weighed thirty-five pounds; it was presented to lord Cholmondeley, who ordered it to be put into a canal in the garden, wherein were abundance of several sorts of fish. About twelve months after, his lordship drawed the canal, and found that this overgrown pike had devoured all the fish, except one large carp, that weighed between nine and ten pounds, and that was bitten in several places. The pike was then put into the canal again, together with abundance of fish with him to feed upon, all which he devoured in less than a year's time; and was observed by the gardener and workmen there to take the ducks, and other water-foul, under water; whereupon they shot magpies and crows, and threw them into the canal, which the pike took before their eyes: of this they acquainted lord Cholmondeley, who thereupon ordered the slaughterman to fling in calves bellies, chickens guts, and such

such like garbage to him, to prey upon; but being soon after neglected, he died, as supposed, for want of food.

In the stew for preserving fish, at John Egerton's, Esq; at Tatton in Cheshire, a large pike was taken out, when there appeared at his mouth the tail of a fish, which being pulled out, proved to be another pike, weight one pound, and was then alive.

In 1730, whilst Peter Bold, of Bold, in Lancashire, was netting some pits in Burton-wood, he saw a pike lying amongst the weeds. Mr. Ralph Taylor, gentleman who accompanied him, twice attempted to seize the pike, but it escaped. Afterwards the pit was drawn, and a tench about five pounds weight pulled out; and so was this pike, with the tail of another hanging out of its mouth, which being measured with the other, proved nearly of equal size.

About the year 1740, when Robert Hyde of Cosnal, Esq; came of age, he had a large company of gentlemen to dine with him, to whom a fisherman brought three pikes, one of twenty-three pounds, another of twelve-pounds, and a third of four-pounds, which he had caught by trolling in the Weaver; that

of twelve pounds appeared in many places you e
to have been bit, which he thus account- must
ed for. Whilst he was drawing the fish may
to land, it was laid hold of by a larger purpo
pike, which stuck fast, and was landed, T
but then quitted his hold and got away, is th
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The pike delights in a quiet, shady, unsrequent water, and lurks in the midst of weeds, flags, or bull-rushes: yet he frequently makes excursions from thence, and ranges about in search of prey: in cold weather he lies deep, and near the bottom, but as the weather grows warm he frequents the shallows. In a very hot, clear, sultry day, he may be seen lying on the surface of the water, but then you cannot tempt him with any bait. His best biting time is early in the morning and late in the evening when there is a brisk wind, and where the water is clear. If they bite at all, they will take the bait at first; it is therefore useless to throw it often in the same place. He will take any sort of bait, except a fly; but the principal are young roach, dace, gudgeons, minnows, loaches and bleak: in July young frogs and salmon-smelts are proper; and in winter the fat of bacon. Your baits in general should be fresh, sweet and clean, and i
you

you expect to catch large ones, your baits must not be too small, otherwise you may spend a great deal of time to little purpose.

The best of the water-frogs for a pike is the yellowest that can be got: and that your frog may continue long alive, put your hook into its mouth and out at his gills, and then with a fine needle and silk fasten the upper part of his leg with only one stitch to the arming-wire of your hook, or tie it gently above the upper joint to the armed-wire, being careful to hurt him as little as possible. There are several ways of fishing for a pike, but the principal are trowling, trimmer-angling, and snap angling.

In trowling, the line should be made of green silk, or thread, and should be forty yards long, or upwards, if the river is broad. Very great care should be taken that your line may run freely out; for if it knots, or entangles, and by that means checks the motion of the pike as he runs away with the bait, he will let it go, and will not be prevailed upon to take it again very soon, unless he be extremely hungry. When you have fixed your bait on your hook, with as little damage to it as possible, cast it up and

down such places as you imagine the pike frequents, letting it sink a considerable depth before you pull it up again. When the pike comes, you may sometimes perceive by a motion in the water, or at least you may feel him, which is the same thing. When this happens, your business is to give him line enough, that he may have free scope to go where he pleases, without the least check, for the reasons above-mentioned. When he is got into his hold, there let him lie till you perceive the line move, and then you may conclude he has pouched the bait; then wind up your line till you think it is almost straight, and with a nimble jerk, contrary to the way the pike takes, hook, and land him as soon as you can.

A trimmer is made use of in the still part of a river, or in a pond, meer, or canal. Your bait, which should be a young roach, dace, or gudgeon, may hang about mid-water, and may be left to itself while you are fishing elsewhere. By this artifice one person may do as much execution as if he had a companion along with him, with little or no additional trouble to himself.

A snap is generally two large hooks placed back to back, and a perch-hook

in the middle to hang your bait upon. When you make use of it, take a gudgeon, dace, or small roach, and fix it to the small hook, by running it under the back fin; then let it swim down the current, and when you perceive the float to be drawn under water, you may conclude the pike has laid hold of it; therefore give it a smart jerk, and without giving him time to play, keep your line always straight, drawing him towards the shore as soon as you can, without breaking your tackle, and then with your landing-net throw him out of the water. It will always be the most prudent method to have gimp or brass wire next your hook, and your line to be rather shorter than the rod.

Observe, that in trowling, the head of the bait-fish must be at the bent of the hook, and must come out at or near his tail. But the essential difference between these two methods is, that in the former, the pike is always suffered to pouch or swallow the bait; but, in the latter, you are to strike as soon as he has taken it.

The common trowling hook, for a living bait, consists of two large hooks, with one common shank, made of one

piece of wire, of about three quarters of an inch long, placed back to back, so that the points may not stand in a right line, but incline so much inwards, as that they, with the shank, may form an angle, little less than equilateral. At the top of the shank is a loop, left in the bending, the wire to make the hook double, through which is put a strong twisted brass-wire, of about six inches long; and to this is looped another such link, but both so loose, that the hook and the lower link may have room to play: to the end of the line fasten a steel swivel.

There is however a sort of trowling-hook different from that already described, and to which it is thought preferable, which will require another management; this is no more than two single hooks tied back to back, with a strong piece of gimp between the shanks; in the whipping the hooks and the gimp together make a small loop, and take into it two links of chain of about an eighth of an inch diameter; and into the lower link, by means of a small staple of wire, fasten by the greater end a bit of lead, of a conical figure, and somewhat sharp at the point. These hooks are to be had at the fishing-tackle shops, ready

ready fitted up. This latter kind of hook is to be thus ordered, *viz.* put the lead into the mouth of the bait-fish, and sew it up; the fish will live some time, and will swim with near the same ease as if at liberty. But if you trawl with a dead-bait, as some do, let the shank be about six inches long, and leaded from the middle as low as the bent of the hook, to which a piece of very strong gimp must be fastened by a staple, and two links of chain; the shank must be barbed like a dart, and the lead a quarter of an inch square: the barb of the shank must stand like the fluke of an anchor, which is placed in a contrary direction to that of the stock. Let the gimp be about a foot long, and fix a swivel to the end of it. To bait it, thrust the barb of the shank into the mouth of the bait-fish, and bring it out at his side near the tail; when the barb is thus brought through, it cannot return, and the fish will be perfectly straight; a circumstance that renders the trouble of tying the tail unnecessary.

There is also another sort of trawling-hook, which is, indeed, no other than what most writers on this subject have mentioned; but the others here described

scribed are late improvements ; and this is a hook either single or double, with a long shank, leaded about three inches up the wire with a piece of lead about a quarter of an inch square at the greater or lower end : fix to the shank an armed wire about eight inches long ; to bait this hook, thrust your wire into the mouth of the fish, quite through his belly, and out at his tail, placing the wire so as that the point of the hook may be even with the belly of the bait-fish ; and then tie the tail of the fish with strong thread to the wire. Some fasten it with a needle and thread, which is a neat way. Both with the trowl, and at the snap, cut away one of the fins of the bait-fish close at the gills, and another behind the vent on the contrary side ; which will make it play the better. The bait being thus fixed, is to be thrown in, and kept in constant motion in the water, sometimes suffered to sink, then gradually raised ; now drawn with the stream, and then against it ; so as to counterfeit the motion of a small fish in swimming. If a pike is near, he mistakes the bait for a living fish, seizes it with prodigious greediness, goes off with it to his hold, and in about ten minutes pouches it. When

he

he has thus swallowed the bait, you will see the line move, which is the signal for striking him ; do this with two jerks, and then play him. Chuse to trowl in clear, and not in muddy water, and in windy weather, if the wind be not easterly. Some use in trowling and snapping, two or more swivels to their line ; by which means the twisting of the line is prevented, the bait plays more freely, and, though dead, is made to appear as if alive ; which, in rivers, is doubtless an excellent method : but those who choose to fish in ponds, or still waters, will find very little occasion for more than one.

The pike is also to be caught with a minnow ; for which method observe the following directions. Get a single hook, slender, and long in the shank ; let it resemble the shape of a shepherd's crook ; put lead upon it, as thick near the bent as will go into the minnow's mouth : place the point of the hook directly up the face of the fish ; let the rod be as long as you can properly manage, with a line of the same length, cast up and down, and manage it as when you trowl with any other bait : if, when the pike has taken your bait, he runs to the end

of

of the line before he has gorged it, do not strike, but hold still only, and he will return back, and swallow it: but if you use that bait with a trowl, it is preferable to all others. When you have struck him, be sure to have your line ready and slack, that he may take as much liberty as he will: for when he finds himself trepanned with the hook, he will exercise all his strength and cunning to get loose. As you feel him come easily towards you, you may be still drawing, till you feel him make resistance again: then let him have his swing till his fury is over; after which gather your line to you again till he starts away; and if you can get him to the top, it will sooner tire him: for the more he strives and throws himself from you, the sooner he will be weary. After this manner, by drawing him up, and letting him loose again, you may tame him till you bring him to shore, and land him by the net. But if you are unprovided with this convenience, beware of attempting to take him out by the back or tail, but grasp him by the head, and put your fingers into his eyes. If you lay hold by his gills, your fingers may be injured with his bites.

The

The pike is common in most of the lakes of Europe, but the largest are those taken in Lapland.

THE SEA PIKE.

THIS fish is also known by the name of the sea-needle: its form resembles that of the river pike, but is proportionably longer and rounder. It is covered with small scales, and has an oblong conical snout. The colour of the inside of the mouth is between a yellow and a purple, and the jaws and tongue are furnished with teeth. The eyes, which are large, have each a silver coloured iris: the nostrils are wide and round. The tail is forked. The sea-pike is an inhabitant of the Mediterranean.

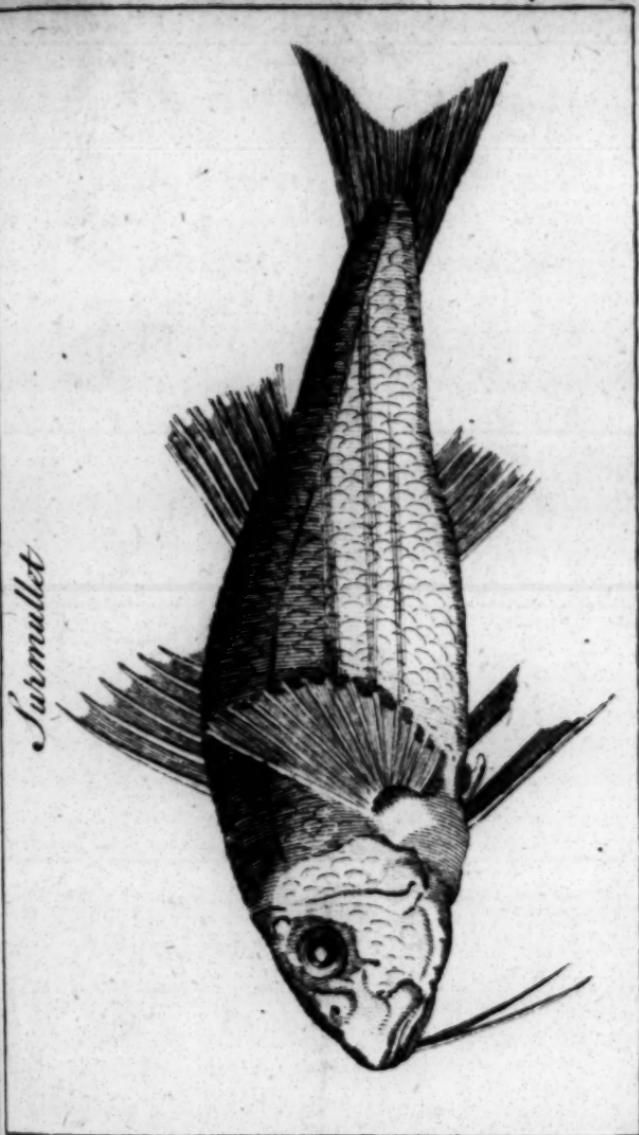
THE ARGENTINE.

THIS is a small fish of a slender form, not unlike that of the pike. The back is green, and the sides, beneath the lateral line, are silvery. The nose is sharp-pointed, the eyes large, and the teeth very minute: the head is so transparent, that the brain may be seen thro' the skull. It is however principally distinguished

tinguished from all other fish by the air-bladder, which is conical at both sides, and outwardly appears as if it was covered with polished leaf-silver. This is used in the manufacture of artificial pearl. This fish is often seen in the fish-markets at Rome.

THE MULLET.

THE form of a mullet resembles that of a dace: the head is almost square, and flat at the top; the nose is sharp, and the lips thick. It has large scales, not only on the body, but also on the head, and the covers of the gills. The back is of a blueish brown, and the belly white. The lateral lines are variegated alternately with black and white. The eyes have no other skin than their own coats, and the forward back-fin is radiated with five long spines. The mouth is destitute of teeth, but the tongue is roughish; and there are two rough bones on each side of the palate. This fish has also a bone beset with prickles, at each corner of the mouth: when at its full growth, it is about eighteen inches long. It visits the rivers in the southern parts of England, in the beginning



Surmullet



beginning of the summer with every tide, and returns back when the water ebbs. Those taken near Arundel, in Sussex, are said to be much superior to any others. The mullet is an excellent fish for the table.

Mullets generally come in great shoals, and keep rooting in the sand or mud, like hogs. They are very sagacious, and when surrounded with a net, the whole shoal frequently escapes by leaping over it ; for when one takes the lead, the others immediately follow. Oppian takes notice of this circumstance, and his observations are thus translated by Jones.

The mullet, when encircling seines inclose,
The fatal threads and treach'rous bosom
knows.

Instant he rallies all his vig'rous pow'rs,
And faithful aid of ev'ry nerve implores ;
O'er battlements of cork updarting flies,
And finds from air th'escape that sea denies.
But should the first attempt his hopes de-
ceive,

And fatal space th'imprison'd fall receive,
Exhausted strength no second leap supplies ;
Self-doom'd to death the prostrate victim lies
Design'd, with painful expectation waits,
Till thinner elements complete his fates.

The mullet was in great estimation among the Romans, and bore an exceeding

H ing

ing high price. The price given for one in the days of Juvenal and Pliny is a striking evidence of the luxury and extravagance of that age.

*MULLUM sex millibus emit
Æquantem sane paribus sestertia libris.*

Juv. sat. iv.

*The lavish slave
Six thousand pieces for a mullet gave,
A sesterce for each pound.*

DRYDEN.

Asinius Celer, however, a man of consular dignity, was infinitely more lavish than the epicure mentioned by Juvenal; for he gave eight thousand mummi, or sixty-four pounds eleven shillings and eight-pence, for a fish of so small a size as the mullet*. Such indeed was the luxury of the times, that there were stews in the eating-rooms, so that the fish could at once be brought from under the table and placed upon it; they even put the mullets in transparent vases that they might be entertained with the various changes of its colour while it lay expiring †.

* Plin. lib. ix. c. 17.

† Seneca, nat. Quæst. lib. iii. c. 16.

THE FLYING-FISH.

IN shape and colour the flying-fish nearly resembles that of a herring, but the eyes are larger in proportion. It has two pair of fins like wings ; the greater of which are placed a little behind the gills, and the lesser about the region of the vent. The wings before are preceded with a small fin of six rays ; and the upper part of the wings is of a dirty olive colour ; but on the edge they are beautifully painted with round blue spots. By the help of these wings they arise out of the water, and fly a considerable way, to avoid the pursuit of the *dolphins* and other fishes that would devour them. Some authors say that they will fly for two hundred paces together, and fall down when their fins grow dry ; in their flight they go sometimes on one side, sometimes on the other, and are taken either in the water by gilt-heads, or out of it by sea-mews or cormorants. They are never taken by fishing for them ; but will often fly into the ships that sail between the tropics. Nieuhoff says, that the flying-fish is blueish on the back, but inclining to brown towards the tail ;

that it has large eyes, broad yellowish fins, and in shape resembles the smelt. Different authors, says a naturalist, having given different accounts of this fish, renders it highly probable, that there are several kinds of them. The flesh of them has a very agreeable flavour, and is very wholesome; which, very likely, may be the inducement to other fishes so frequently to pursue it. Mr. Ray affirms, that he has seen them frequently in the fish-markets at Rome, as well as in the islands of Sicily and Malta, where they are brought for sale. The antients were acquainted with this species: Pliny mentions it under the name of *hyrundo*, and speaks of its flying faculty.

THE HERRING.

HERRINGS differ greatly in size, but the usual length is from nine inches to a foot. The colour of the back and sides is green, varied with blue, and the belly is silvery. What principally distinguishes this fish from all others, is a scaly line that runs along the belly from the head to the tail. The scales are large, thin, and fall off with a slight touch.

touch. It has no spots, and the belly is sharp like a wedge. The eyes are very large ; the edges of the upper jaw and the tongue are very rough, but the whole mouth is void of teeth : the gill-covers are very loose, and open wide ; which occasions the immediate death of the fish when taken out of the water ; whence the proverb arises, *as dead as a herring*. The tail is forked, and the swimming-bladder is of a silver colour.

The flesh of the herring is in great esteem, being fat, soft, and delicate ; especially if it is drest soon after it is taken.

Herrings are met with in vast shoals on the coast of America, as low as Carolina : they are also extremely numerous in the seas of Kamtzchatka. Their great winter rendezvous is within the arctic circle ; where they continue several months in order to recruit themselves after the fatigue of spawning ; the seas within that space swarming with insect food, in a much greater degree than in our warmer latitudes.

Herrings begin to appear off the Shetland Isles in April and May ; but the grand shoal make their appearance in June. Their number is so immense as to alter the appearance of the very ocean.

They are divided into distinct columns of five or six miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling; sometimes they sink for a few minutes, then rise again to the surface, and in fine weather reflect a variety of splendid colours.

Towards the end of June, herrings are in full row, and they continue in perfection till the beginning of winter, when they begin to deposit their spawn. The young herrings approach the shores in July and August, and are then from half an inch to two inches in length. Very few young herrings being found in our seas during winter, it is imagined, that they must return to their parental haunts beneath the ice, to repair the vast destruction of their race during summer, by men, fowl, and fish. Some few of the old herrings continue on our coasts the whole year, but their number is very inconsiderable.

The herring-fishery is of great antiquity: the Dutch first engaged in it about the year 1164: their diligence and skill gives them a superiority over us in that branch of trade even at this day; it is nevertheless a considerable article among

among the English. Yarmouth has long been famous for its herring fair, which was regulated by an act in the 31st of Edward the Third: that town is obliged, by its charter, to send to the sheriffs of Norwich one hundred herrings, to be made into twenty-four pies, by them to be delivered to the lord of the manor of East Carleton, who is to convey them to the king*.

This valuable fishery has not escaped the attention of the present generation. By the 28th of Geo. II. C. 14. it is enacted, that if any person shall damnify or destroy, without the consent of the society of the Free British Fishery, any of the nets, sails, cordages, stores, or other materials belonging to the said society, he shall forfeit to the society treble value by distress; and for want of distress, to be committed to the house of correction for three months.

Immense quantities of these fish are annually taken, many of which are consumed whilst they are fresh, and the rest are salted, pickled, or smoak-dried, and are an edible article all over Europe.

Fresh herrings, considered as a food, are said to be very good aliment, if used

* Cambden Britan. i. 458.

moderately ; but, taken in quantities disproportioned to the powers of digestion, they produce a putrefaction in the stomach, of the alkaline kind, and are attended with very bad consequences. But pickled herrings are very bad aliment, the flesh being rendered hard, and scarcely digestible by the vital powers. These, however, are less injurious than those which are salted and dried ; these last being more hardened, and consequently less easily digested.

It was a question formerly, whether herrings fed upon any thing besides water ? but Lewenhoeck has made it evident, that they come every year in pursuit of worms and small fish, which at the time of their arrival abound in the channel ; for when they have cleared the northern seas of their stock of provisions, then they travel southward, in search of a fresh supply.

The Dutch begin their herring-fishery on the 14th of June, in which they employ no less than a thousand vessels. These vessels are a kind of barks, called buffles, carrying from forty-five to sixty ton, and two or three small cannon. None of them are allowed to stir out of port without a convoy, unless they carry twenty

twenty pieces of cannon among them all, in which case they are permitted to go in consort. Before they set out they make a verbal agreement, which has the same force as if it was in writing. The regulations of the admiralty of Holland are in a great measure followed by the French, and other nations: the principal are, that no fisher shall cast his net within a hundred fathom of another's boat: that while the nets are cast, a light shall be kept on the hind part of the vessel: that when a boat is by any accident obliged to leave off fishing, the light shall be cast into the sea: likewise, that when the greater part of the fleet leaves fishing, and casts anchor, the rest shall be obliged to do the same.

The best times of fishing on the coast of Norfolk and Suffolk, near Yarmouth, Lestoffe, and Southwold, are from the middle of September till the middle of October. The nets that they use are about five yards deep, and twenty-five yards long: they sometimes fasten so many of these nets together as will take a mile in compass. They judge whereabouts the herrings lie by the hovering and motion of the sea-birds, which continually pursue them in expectation of prey.

prey. The fishers, as they row gently along, let their nets fall into the sea, taking their course as nearly as they can against the tide, that so when they draw their nets they may have the assistance of the tide. As soon as any boat has got its load, it makes to the shore, and delivers the herrings to the man who is to wash and gut them. They distinguish their herrings into six different sorts, as the fat herring, which is the largest and thickest of all, and will keep about two or three months; the meat-herring, which is likewise large, but not so thick nor so fat as the former; the night-herring, which is of a middle size; the pluck, which has received some damage from the nets; the shotten-herring, which has lost its milt or spawn; and the copshen, which by some accident or other has been deprived of its head. All these herrings are put into a tub with salt or brine, where they lie for twenty-four hours; when they are taken out and put into wicker-baskets, and washed; after this they are spitted on small wooden spits, and hung up in a chimney built for that purpose, at such distances that the smoke may have free access to them all. When they have filled these places, which

which will hold ten or twelve thousand, they kindle the billets which are laid on the floor, in order to dry them ; this done, they shut the doors, all other air-holes being stopt before, and immediately the place is filled with smoke. This is repeated every quarter of an hour, insomuch, that a single last of herrings requires five hundred billets to dry them. A last is ten barrels, each barrel containing near a thousand herrings. These, thus prepared and dried, are called red-herrings.

The pickled-herrings are best done by the Dutch, who take them for that purpose about the summer solstice. The usual method of pickling them is this : as soon as the herrings are taken out of the sea they are gutted and washed : then they are put into a strong brine, made with water and sea-salt, for fifteen hours ; after this they are taken out and well drained, and put in a regular order into barrels, with a layer of salt at the bottom of the barrel, and another at the top. Then take care to stop them up carefully that no air may get in, nor brine out, either of which would be prejudicial to the fish.

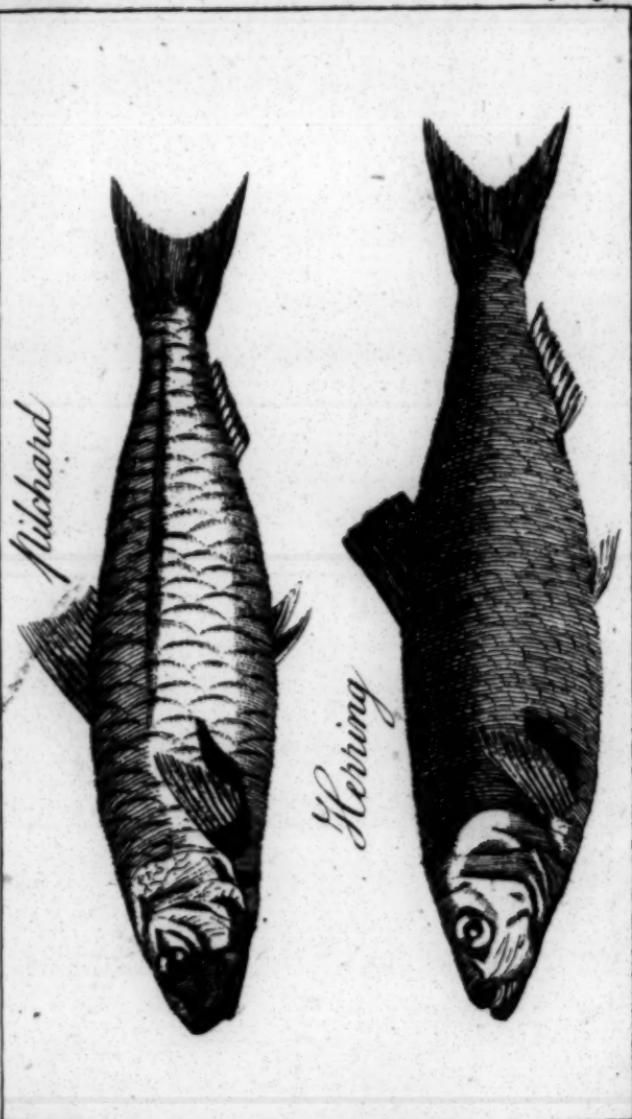
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THE PILCHARD.

THE pilchard greatly resembles the herring, but differs from it in some particulars; it is a third part less, and the body is proportionably broader: it has a black spot near the upper corner of the gills, and the belly is not so sharp. It has no teeth, either in the jaws, the tongue, or the palate.

Pilchards appear in vast shoals off the Cornish coasts about the middle of July, and disappear at the beginning of winter; though a few of them sometimes return again after Christmas. This fishery employs a great number of men on the sea; and men, women, and children on land, in salting, pressing, washing, and cleaning; in making boats, nets, ropes, casks; and all the tradesmen depending on their construction and sale. The usual quantities exported *each year*, for ten years, from 1747 to 1756 inclusive, on the average is as follows: Fawy has exported 1732 hogsheads annually; Falmouth 1463, and one third; Penzance and Mounts Bay 12149, and one third; St. Ives 1282; in all amounting to 29795 hogsheads.

THE





THE SPRAT.

IT was supposed by Mr. Willoughby and Mr. Ray, that sprats were the fry of the herring or the pilchard, as they exactly resembled either the one or the other in every particular except the size: Mr. Pennant, however, is of a different opinion, and says, that on comparing a sprat and a young herring of equal size, some specific differences were discovered. He also observes, that the sprats visit our coasts, and continue with us in shoals innumerable, when the young herrings have, in general, retired to the great northern deeps.

Sprats appear below bridge, in the river Thames, early in November, and leave it in the month of March, and are, during that season, a great relief to the poor of the metropolis.

The sprat seldom exceeds the length of five inches; and the body is proportionably deeper than that of a herring.

THE ANCHOVY.

THE anchovy is about a palm in length, and almost of the colour of a

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sprat.

Sprat. The true anchovies are taken in vast quantities in the Mediterranean, and are brought over here pickled. The body is rounder, and not so compressed as that of the herring: they are also transparent, except where the spine of the back prevents it: they have a sharp nose, and the upper jaw is longer than the lower: the mouth is extremely wide in proportion to the size of the fish: the eyes, and the apertures of the gills, are also very large. The anchovy has this peculiar property, that it will dissolve in almost any liquor, when it is set over the fire:

There is a fish sometimes taken in the sea near Chester, which Mr. Ray, and some others, suspected to be the anchovy; but it is different from those taken in the Mediterranean.

THE GOLDEN ANCHOVY.

THIS is an East Indian fish, and is so called on account of its shining golden colour. The mouth, which is very large and long, is armed with sharp teeth: the body is long, and almost as slender as that of the eel.

THE S H A D.

THE shad differs from the herring in being broader, thinner, and more compressed on the sides : it is also larger than the herring, the general size being three or four pounds ; though they sometimes weigh seven or eight pounds. On each side, near the gills, it has a large round black spot, and six or seven small ones, placed in a right line towards the tail ; in which particular it agrees with the silchard. The shad enters the mouths of rivers, which herrings never do. The severn affords the shad in higher perfection than any other river. This fish makes its first appearance in April and May, according to the temper of the air : in very warm seasons it is always seen in April, and usually continues in the river about two months. The Severn shad is very delicate fish about the time of its first appearance, especially in that part of the river near Gloucester. The Thames shad is reckoned a very coarse impid fish : it does not frequent that river all the month of July. There is indeed so great a difference between the Thames shad, and that of the Severn,

that they can hardly be considered as the same fish.

THE C A R P.

THE colour of the carp, especially when full grown, is yellowish, and the scales are large: the head is short, like that of the tench, and the mouth is of a middling size, with fat fleshy yellow lips. It has no teeth in the jaws or on the tongue, but it has a triangular bone in the palate, and two other bones in the throat, which answer the purpose of teeth. It has a single barb on each side of the mouth, and another above those which is shorter: the fins are large; the tail is broad, a little forked, and of a reddish black colour: the lateral line is straight, and passes through the middle of each side.

There were no carps in our ponds or rivers, till they were introduced here by Leonard Maschal, about the year 1514. Russia has none of these fish at this day. Sweden has them only in the ponds of the people of fashion; but they abound in the rivers and lakes of Polish Prussia, where they are taken of a vast size. There are there a great article of commerce.

and are sent in well-boats to Russia and Sweden.

Pliny says it lives in the sea * ; and we are credibly informed, that carps are sometimes found in the harbour of Dant-zick. They are very long lived. Ges-ther affirms, that he knew a man of good like reputation, who assured him he had seen of a one of an hundred years old. They al-ways grow to a very great size : a carp was taken in the river Thames, near Hamp-ton-court, that weighed thirteen pounds. Jovius † says, carps were sometimes caught in the Lacus Larius, of two hundred pounds weight ; and, according to Rzaczynski, others have been taken in the Dniester which were five feet in length. They are extremely tenacious of life, and have been kept alive out of water upwards of a fortnight, by being wrapped up in wet moss, with the mouth only remaining out. It should be hung up in a cool place, fed with bread and milk, and sometimes plunged into the water. By this treatment they grow fatter, and have a finer flavour than those which are immediately killed from the pond.

The carp is a prodigious breeder : the

roe has sometimes been taken out and

Lib. ix. c. 16.

† *De piscibus Romanis*, 13².

weighed with the fish itself, when the former has been found to preponderate. The carp has perhaps the longest scales of any fish, in proportion to its bulk. Some of these are brown, and others yellow and white: the brown colour prevails in the largest scales; the middle are of a yellow and gold colour; but the white are small and silvered.

The flesh of the river carp is much better than that of the pond, and in general it is more or less wholesome, according to the nature of the water in which they are bred, and consequently muddy stinking ponds produce the worst fish. It is soft, insipid, and not entirely free from viscidity. But curious eaters value it chiefly for the palate, or tongue, as they call it. The river carp is not fond of a rapid stream, but delights in a still deep water, with a marly, or clayey bottom, especially if there be green weeds, which he is extremely fond of. A carp exercises the angler's patience as much as any fish, for he is very sly and wary. They seldom bite in cold weather, and, in hot, a man cannot be too early or too late for them. But when they do bite, there is no fear of their hold.

Proprietary

Proper baits are the red-worm in March, the cadew in June, and the grass-hopper in July, August, and September. But a recent discovery has proved a green-pea to be a bait inferior to none, if not the best of all; and that the best method to prepare them for use, is by half-boiling a sufficient quantity, and covering them with melted butter. In hot weather, he will take a lob-worm at top, as a trout does a fly: or, between the weeds, in a clear place, sink it without a float, about eight inches in the water, with only one large shot on the line, which is to be lodged on the leaf of some weed: then retire, keeping your eye upon the shot, till you see it taken away, with about a foot of the line, and then you may venture to strike; but keep him tight, and clear of the weeds. Great numbers of carp have been taken in this manner.

In ponds, the best method is to throw six or eight slices of bread, to be carried with the wind, and in a short time, it is probable, you will see many fish feeding on it: if not, crumble a little very small, and cast it in where the slices rest; which will be a means to make them find the pieces at top, and after suffering them to

to feed on it, take a very long rod, a strong line, a middle sized hook, and one shot fixed just above the hook, and baited with about the size of a large horse bean of the upper crust of a rasped French roll, and you may pick out what size and quantity you please, by dropping your bait before the largest fish, as he is feeding on the slices at top. This is a sure means of getting sport, and but little known. This fish, as already observed, is very cautious, and therefore your float must be small, and you must be sure to keep out of sight. And because when hooked he struggles in a violent manner, you must take care that your tackle be very good and strong, otherwise he will break from you.

Having fixed upon a place which you think a proper harbour for carp, you should plumb your ground over-night, in order to find the depth of the water. Likewise at the same time bait the place with small bits of congealed blood, boiled malt, wheat, or rye, mixed with bran. The next morning early repair to the place as gently as you can, taking care, as mentioned above, to keep out of sight; when you have a bite, let the float sail away before you strike, and then do it

strongly,

strongly, and the contrary way to the motion of the float, and there will be less danger of pulling the bait out of the fish's mouth. When you have hold of him, if your tackle is good, you need not fear losing him, for he seldom breaks his hold. When you angle for a carp you ought not to forget your landing-net, which is by much the safest way of taking him out; otherwise play the fish till you draw it to the shallows, where you may fix your rod upright in the ground at a proper distance from the river, and, putting both your hands under the fish, throw it on the shore.

If you are desirous of angling with a paste, the following is as good as any: take fine flour, a bit of lean raw veal, a little honey, and cotton-wool sufficient to keep the ingredients together, and beat them in a mortar to a paste. Or white bread mixed with cotton-wool, and worked into paste with some of the water where you are fishing, is not a despicable bait. Carp will take red currants, green figs, or almost any sort of bait. When you fish with a grasshopper you must take off its wings, and let it sink into the water without lead or float. Gentles, two upon a hook, and throwing

ing in chewed white bred, is a good method to angle for carp, especially in a pond.

As the carp is but indifferent food without excellent sauce, we beg leave to observe, that the following method is in high repute for dressing carp.

Take a carp, alive if possible, scour him, and rub him clean with water and salt, but do not scale him; then open him, and put him, with his blood and liver, into a small kettle; then take sweet-marjoram, thyme, and parsley, of each half an handful, a sprig of rosemary, and another of savoury, bind them into two or three small bundles, and put them to your carp, with four or five whole onions, twenty pickled oysters, and three anchovies. Then pour upon your fish as much claret as will cover him, and season your claret well with salt, cloves, mace, and the rinds of oranges and lemons; cover your pot, and set it on a quick fire till it be sufficiently boiled; then take out the carp, and lay it with the broth into the dish, and pour upon it a quarter of a pound of fresh butter melted, and beaten with half a dozen spoonfuls of the broth, the yolks of two or three eggs, and some of the herbs

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herbs shred: garnish your dish with lemons, and so serve it up.

THE BARBEL.

THE weight of the barbel is generally about seven or eight pounds: though they are sometimes found of the length of three feet, and eighteen or twenty pounds in weight. The back is of a palish olive colour, and the belly is silvery: the back and sides are marked with black spots; and the shape of the body is long and roundish; but the back is sharp and arched. The scales are not large, and the lateral lines run through the middle of the sides. The snout is sharpish, and the mouth is without teeth like the rest of this kind. The upper jaw is longer than the lower, and it has two barbs on each side; one at the corner of the mouth, and the other on the side of the nose. The eyes are small, and their iris is either of a silver or a gold colour, spotted with brown. In summer their bellies are red. The flesh is soft, flabby, and extremely coarse: the barbel is indeed the worst and coarsest of fresh-water fish. The roe is very noxious, affecting those who eat of it with a nau-

a nausea, vomiting, purging, and a slight swelling. In summer, these fish move about in the night in search of food ; but in autumn and winter they confine themselves to the deepest holes.

The barbel is bred in most rivers ; and the Thames, in particular, abounds with them. In the summer he haunts the swiftest and shallowest streams, where he lurks under the weeds, and works and routs with his nose in the sand, like a o'clock hog. Yet sometimes he retires to bridges, flood-gates, locks and weirs, where the waters are swift and deep. He never feeds off the ground, and will take any sort of worm, bits of bacon, old cheese, or new cheese, if kept in a linnen rag, dipped in honey two or three days to make it tough. The watermen, who attend on you when you fish in their boats, sometimes provide graves, to be had at the tallow-chandlers, for a ground bait. over night ; yet they generally use the same worm that you bait with. They are a very subtle, strong fish, struggling hard for their lives, and will often pick off your baits.

On the morning of August 23, 1771, Mr. Warren, the Perfumer, of Marybone street, began to angle in Walton Deep,

and found such sport, that he stopped before noon, tired with fatigue, and found that he had caught two hundred and eighty pounds of large sized barbel. This gentleman usually has the Deeps baited with worms over night, and in the morning fishes from a well boat, with a perfumed paste on his hook.

His time of biting is early in the morning, in June, July, and August till ten o'clock, and from four in the afternoon till sun-set; but September and October are to be preferred to any other months, because then they retire to the deep holes. In the summer they come to the shallows about sun-set, where they may be easily taken with a scoured lob-worm. Your rod must be very strong, with a tough whalebone at the end. You have no occasion for a float, but must put a large bullet on the line that your bait may lie deeper. You must have ten hairs next the hook, but the remaining part of your line must be silk. If you make use of a wheel, as in trout-fishing, it will answer your purpose the better.

The most famous places near London for barbel angling, are Kingston-bridge, and Shepperton-deeps; but Walton-deeps, Chertsey-bridge, the small isle at Brent-

ford, Hampton-ferry, and the holes under Cooper's-hill, are thought to be in no wise inferior: you may likewise meet with them at all the locks between Maidenhead and Oxford.

THE TENCH.

THE tench seldom exceeds four or five pounds in weight in this island, but in some countries it has been found to weigh twenty. It is sometimes called the physician of the fish, and it is said that the skin is so healing, that the wounded apply it as a styptic. Mr. Diaper, in his piscatory eclogues, says, that even the voracious pike will spare the tench on account of its healing powers.

The tench he spares a medicinal kind:
For when by wounds distrest, or sore disease
He courts the salutary fish for ease;
Close to his scales the kind physician glides
And sweats a healing balsam from his sides.

It is a mucous, excrementitious fish, which delights in marshy and muddy waters. As to its medical uses, it is cut and applied to the wrists, and soles of the feet, in order to mitigate feverish heats and to divert the venom of the pestilence in like manner is it applied in pains of

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the head and joints. Live tenches, applied one after another to the regions of the umbilicus and liver, and kept there till they die, are said to cure the jaundice; for they contract, it seems, a yellow colour.

There are two small stones in the head of the tench, that have an absorbent, detergent, and diuretic quality. Whatever may be the uses of its slime to the inhabitants of the water, its flesh is certainly a wholesome and delicious food to those of the earth.

The tench has a small head and nose in proportion to the size of the body; which is broad, thick, and short: the colour of the body is dusky; the dorsal and ventral fins are of the same colour: the head, sides, and belly, are of a greenish cast, beautifully mixed with gold, which is in its greatest splendour when the fish is in the highest season. The tail is blackish, somewhat square, and consists of nineteen rays: the eyes are small, seated on the sides of the head, and the iris is red. The tench delights in still waters, and is seldom found in rivers.

The tench delights so much in standing waters and ponds, and the still parts of ri-

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vers, whenever they are found there, for they seem to be the natives of standing water. However, they are said to breed in the rivers Stower in Dorsetshire, and the Tiber in Italy. Their time of spawning is the latter end of June, or the beginning of July; and they are in season from the beginning of September to the end of May. Most anglers declare, that this fish bites best in the three hot months; and yet others have found they will bite at all times, and at all seasons, unless after a shower of rain, but best of all in the night.

The best baits for this fish are a middle-sized lob-worm, or red-worm, well scoured, a gentle, a young wasp, a grub boiled, or a green grub; or you may use the clotted black blood in a sheep's-heart, made with fine flour and honey into the consistence of an unguent; and your bait (when it is a red-worm) anointed with this, is by many preferred to other baits. But some have had more success with a red-worm dipped in tar, than any other. They bite almost in the same manner as the pond-carp, and will run away with your float; but when once you have hooked him, you are in no danger of losing him, if your tackle is

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but strong enough. The ground-bait should be the same as for all pond-fish, that is, either blood, or blood and grains mixed.

When the weather is very warm, you must fish about mid-water, gently pulling your bait almost to the surface, and then letting it down as slow as possible. Be not too eager in striking him when he bites, for as he delights in sucking the bait, allow him time and he will not quit it. Use a strong grass or gut, and a goose-quill float, without a cork, except in rivers, where the cork is always to be preferred. Fish very near the ground; and if you bait with gentles, throw in a few at the taking every fish; which will draw them to your hook, and keep them together.

When you angle with a pastte, let a little tar be mixed with it. They bite best one hour before and after the sun rises and sets. In hot weather you may snare them at the top of the water, as the pike, with a doubled-wired link, not over twisted, hung in a noose, tied to a line, on a long rod: let it fall softly before him on the water, without touching him, till you have brought it over

his gills; then pull gently, and you have him.

THE GUDGEON.

THIS fish is generally found in gentle streams, and is about five or six inches long; with a round body, small scales, a brown or olive coloured back, and a whitish belly: the iris is tinged with red; the gill-covers with green and silver; and at each corner of the mouth is a single barb. The tail is forked; and both that and the dorsal-fin is spotted with black. They bite eagerly to a proverb—hence the poet's observation—

What gudgeons are we men!

Every woman's easy prey.

The gudgeon grows to a much larger size in some rivers than in others. We have heard of one taken in that near Uxbridge, which weighed a pound. The flesh is in high esteem, and esteemed little inferior to that of the smelt.

The gudgeon will bite all day from the end of March till Michaelmas, but not till an hour after sun-rise, nor longer than an hour before sun-set. You may sometimes have full as good sport an hour after sun-set as at any time in the day.

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The principal baits for the gudgeon are the small red-worm, gilt-tail, brandling, and a meadow-worm. He will likewise take a gentle, cod-bait, brood of wasps, or cow dung bob ; but the small red-worm is what he is the fondest of. If you can find a bridge or plank over a small river, chuse to angle underneath for gudgeons, for they love the shade ; and are so far from being shy, that you may not only appear in sight, but if you drive them from their place of resort, they will immediately return. A single hair line, a fine taper rod, a float, and a small hook, is what is in general use, and the bait to drag on the ground. When you angle for them in the shallows, raise up the sand or gravel with a rake or pole, and it will draw the gudgeons about your bait ; when you have no such conveniency, throw in some handfuls of earth. Use a float, and let your bait always touch or drag on the ground.

When you angle for them in a boat in the Thames, let the waterman rake the gravel up to draw the gudgeons about you ; then plumb the ground, and bait your hook with a small well-scoured red-worm ; by this method you will seldom

dom fail of good sport. Your tackle as for dace with a well-scoured gilt-tail. There have been an hundred dozen, or more, taken at Metwell Weir, in the river Mersey, with angling, in one day; you may use two hooks at a line at a time, and two rods is not amiss; and then you may sometimes take perch or trout instead of gudgeons.

THE B R E A M.

THIS is a broad flattish fish, with a small squarish head, and a sharp nose. It is extremely deep and thin in proportion to its length: the top of the head is broad and flat; and the back, which rises like that of a hog, is of a dusky blue colour: the belly and sides are white: the scales are large, and the mouth, in proportion to the size of the fish, is very small, and without teeth: the iris of the eye is of a silver colour, and the pupil is small. This fish is an inhabitant of lakes, or the deep parts of still rivers. It is extremely infipid, and consequently very little esteemed.

Breams naturally feed upon slime, weeds, and dirt; but will take any sort of paste, the brood of bees or wasps,

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flies under water, and cod-baits. But a short well-scoured marsh-worm, or a large red-worm, will prove most successful, or the tail of a well-scoured dew-worm, or two or three large brandlings. They bite best when there is a breeze of wind, and require a great deal of baiting to keep them together. When the water is rough, your bait must be placed within a foot of the bottom. They are usually found in the deepest and broadest part of a river, early in the morning, and from three or four in the afternoon till sun-set, when the weather is warm. They bite very slow, and the larger they are, the slower. As soon as you have struck one, he will immediately make to the bottom, and stay there some time; if he stays too long, give him a gentle touch, and he will immediately rise, and give two or three strong tugs; but when once you have turned him, he will soon yield.

The best method of angling for him is this: seek a shallow sandy bottom that leads into a deep hole; then throw into the shallow part of the stream four or five handfuls of marsh-worms, cut in pieces, which will soon drive down into the hole. Use a long rod of proper strength,

strength, with a line proportionable; a small hook, and no float. The hook must be tied to India grafts, on which put a cut shot six inches from the hook, and next to that a small bullet. The use of the shot is to keep the bullet from slipping lower. This done, bait your hook with a short well-scoured marsh-worm, throw in the shallow, and the stream will drive it into the hole. By this method you may catch more in two hours than you can well carry away.

Another method often attended with success is this: seek a deep hole near the bank, plumb the depth over night, and bait it at the same time with grains well squeezed, and mixed with blood. In the morning early visit the place again, and take your stand out of sight; bait your hook with a large red-worm, and drop it gently into the hole. With these precautions you will find sport. But remember always, when you have occasion to plumb the depth of a place the night before, to take notice at your return, whether the water be risen or fallen, and make an allowance accordingly. You may have very good sport, if you bait with chewed white bread, and angle with gentles, or the brood of wasps, but then you

you are not to use so long or strong a rod or line, and a smaller hook.

THE RUD.

THIS is broader than a roach, and thicker than a bream. The back is of an olive colour; and the sides and belly of a gold colour, marked with red. The ventral and anal fins, and the tail, are generally of a deep red. The tail is also a little forked. The head is small, and the iris yellow, inclining to red. The scales are very large. This fish is in great esteem, and always in season, except in April, which is the time of spawning. It is found in the Rhine, in Germany; in the Charwell, near Oxford; and in the Witham, in Lincolnshire.

THE ROACH.

THE body of the roach is pretty deep, but thin. The back, which is pretty sharply ridged, is of a dusky colour, and sometimes blueish: the belly is pale: the iris of the eyes, the fins and tail, are red. The tail is also forked. It is of a gold colour about the gills, and the mouth is

is round and destitute of teeth ; it being a leather-mouthed fish. It breeds both in ponds and rivers, but those bred in the latter are the best, though the others are the longest. This fish and the dace are coarse and insipid meat.

Angle, as for dace or dace, with one gentle. They spawn about the middle of May, and recover their strength in a month's time.

When you angle for roach in a pond, throw in a little chewed white bread, and let your bait (which ought to be one large gentle) lie within six inches of the bottom, and you will not only take much larger, but more in number than you will by any other method. In winter you may fish for him with paste or gentles ; in April with worms or cod-bait ; but in very hot weather with very little white snails, earth-bobs, new-cheese, or with flies under water, for he seldom takes them at the top as the dace will ; and this is the principal thing wherein they differ.

In August the roach-fishery affords great diversion about London, where it is thus practised : any waterman will provide a boat, with rip-hooks, to fix it in the middle of the stream ; and prepare

pare your ground-bait, which is of bran and stale bread, mixed in balls, and thrown in, up the stream, with clay or small stones within, sufficient to sink it speedily, and lodge it at the bottom. Not more than three can conveniently fish in one boat. Your tackle must be strong, your float large, and heavy leaded, to sink the quicker. The constant bait is a well-scoured gentle, three at least on your hook, which must swim ten or twelve inches, at most, from the bottom. The best times are, from half-ebb tide to within two hours of high water: and the best places are, the whole sand-bank in the middle, facing the Tower; that opposite the Temple; before Whitehall; and against Chelsea-church. At these places you will find plenty of sport. Some, with very good success, pick out some stand upon the shore, among the chalk-stones at the banks of the Isle of Dogs, near Limehouse, under the wind-mills, and fish there in the same manner, from dead-ebb, till within an hour or more of high water, retiring backwards as the flood comes in.

There is also another highly approved method of this diversion below-bridge, called stern-fishing, by fastening a boat

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at the stern of any collier or vessel that has lately been a voyage, and has her bottom foul, which contains insects and food for the fish ; use about two joints of your rod at most, and a line not longer than four feet, your float fixed within twelve inches of the top of it. Angle there with three or four gentles on your hook at a time, and lay in as close to the ship's stern as you can, letting it swim about three yards. In this you use no ground-bait. You must begin when the tide first ebbs, and for two hours, at least you will not fail of catching many fish (roach and dace) and those very large ones.

In Thames angling, you must not attempt when there is a cold and raw air, high wind, rough water, or wet weather, or when there are spring-tides, or the land-floods come down. At the chalk-hill, and about the piles of London-bridge, there is excellent sport when the tide is low. Be always careful to pitch your boat on that side the river that is most under the wind.

THE DACE, OR DARE.

THE dace haunts the same places as the roach, and is a great breeder. It

a very lively fish, and in summer delights in frolicking near the surface of the water. The back is varied with dusky and blue; the sides and belly are silvery, and the tail is much forked. It resembles a chub, though it is smaller and somewhat whiter. The iris of the eye is yellow.

The flesh of the dace is sweet, soft, and of good nourishment, but is in no great esteem. They spawn in February and March, and are fit to eat in April and May; but their highest season is from September to the latter end of February. They delight in gravelly and sandy bottoms, and the deepest part of the river under the shade of trees, or dock-leaves.

It is a very simple fish, and will often bite when you least expect it. However, their darling bait is a gentle at the bottom, and a small fly at the top. In the summer months an ant-fly is best. They will likewise take any paste as well as all sorts of small worms.

Angle for him with a very slender rod, a line of single hairs from the top to the hook, which is to be a very small one; one small shot, a float made of two sea-gull quills, cut within about half an inch of the feather, and thrust one of

the open ends into the other, and then whipt fast with fine waxed silk. This makes the very best float, and is drawn under the water without danger of prick-
ing the fish. When you are so provided, get some white bread, and chew it, and throw it into the water in small pieces, and bait with gentles, you will have good sport; or you may fish with boiled malt, and bait with grains, and you will frequently catch chub, bream, and many other sorts of fish. He will likewise take all sorts of flies very well. If you point your hook with one gentle in the spring, he takes an earth-bob very well.

If you angle where two mill-streams are going at one and the same time, let it be in the eddy between the two streams: first make use of your plummet; and if the water be deep, you must angle within a foot of the bottom, and perhaps you will find but little sport. But if it proves to be shallow, that is, about the depth of two feet, or not exceeding three, then bait your hook with three large gentles: use a cork-float, which ought not to be a foot and a half from the hook, and have a quick eye to strike at the very first bite; for if there be any large dace

in the mill-pool, they will resort to the eddy between the two streams.

THE C H U B.

THIS is a very coarse fish, and full of bones: it has a large blackish head, and its body is longer than that of the carp. The back is of a dark green, and the belly and sides of a silver colour. The temples are yellowish, and the scales, like those of the carp, are large and angular. The iris of the eyes is of gold and silver colours. The tail is forked, and the fins are of a blackish blue; tho' sometimes they are tinctured with red. The belly is broadish, and the lateral lines run parallel to the bottom of the belly. The chub is a very timid fish, sinking to the bottom on the least alarm. It does not grow to a very large size; though they have been known to weigh upwards of five pounds.

In August, and in the cooler months, a yellow paste made of the strongest cheese, and pounded in a mortar with a little butter, and so much saffron as being beaten small will turn it to a lemon colour, is a very good bait. In the winter months the chub is esteemed the best,

it being observed, that the forked bones are then lost or turned into a kind of gristle, especially if the fish is baked. Some make a paste for this season of cheese and turpentine. He will also bite at a minnow, as well as the trout. But take this for a rule in chub-fishing, that in hot weather he is to be angled for towards the mid-water, or near the top; and in colder weather near the bottom. And if you fish for him near the top, with a beetle or fly, be careful to let your line be very long, and to keep out of sight. The spawn of this fish is excellent meat; and the head of a large chevin, the throat being well washed, is the best part of him. The flesh is white, soft, and insipid, and is but in very little esteem among the generality of people. The chub is very fond of a large bait. In the summer, at mid-water, five or six cabbage, nettle, or cattle dock-grubs, or a mixture of all or any of the above, mixt with flies, are very good baits.

The chub usually swims in mid-water, and sometimes at the top, and therefore is best taken by dibbing. From the beginning of May to September, you may angle for him before the sun-rises till nine, and in June, July, and August,

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from five till dark, and with the white moth all the night over ; but in the winter he lies lower, and then you may fish for him at the bottom in the middle of the day, with new cow brains. Some people will chew and spit them into the hole where they fish, but if you can mix them very small in a cup with a little water, and throw a small quantity in at a time, you will have sport, if you bait with the same ; this, and the spinal marrow of an ox, is the very best winter bait. They will take almost any bait, as the brains of oxen or sheep dried, and cut into small pieces ; all sorts of worms, gentles, the brood of wasps, blackberries, dewberries, new cheese, grasshoppers, black snails with their bellies slit, and all sorts of paste.

In dibbing, the chub will take a black ant-fly, small butterflies with the great wings cut off, oak-worms, ash-flies, green caterpillars, and the cod-bait ; in short, there is scarce any thing comes amiss to him. It is but a cowardly fish, and when once turned yields presently. But you must master it as soon as you can, because when he is hooked, he does not make to the middle of the stream, but to the banks, which may endanger

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your tackle. When you throw your bait into the water, they fly from it, but return immediately to see what it is, and, if they like it, they swallow it without hesitation, if you keep yourself out of sight.

This fish will afford good sport, if you do as follows. Go to one of their holes, where, in most hot days, you may find a number of them floating near the top of the water. Get two or three grasshoppers as you go over the meadows, and place yourself secretly behind a tree, remaining as free from motion as possible. Put a grasshopper upon your hook, and let your hook hang a quarter of a yard short of the water: to which end you must rest your rod on some bough of a tree. It is probable the chub will sink down towards the bottom of the water at the first shadow of your rod, they being the most fearful of fishes, and apt to do thus if but a bird flies over them, and makes the least shadow on the water: but they will presently rise up to the top again, and there lie floating till some shadow frights them afresh: when they lie thus upon the top of the water, fix your eye upon the best chub you can single out, and move your rod gently towards

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him. Let you bait fall easily upon the water, three or four inches before him, and he will infallibly take it, and you will be as certain to catch him; for he is one of those leather-mouthed fishes, of which a hook scarce ever loses its hold: but be sure to give him play enough, before you offer to take him out of the water. When a grasshopper cannot be found, a black snail, with his belly slit, to shew his white, or a piece of soft cheese, or any sort of natural flies, will usually do as well.

When you angle for him with a fly, let it be a very large hackle, and point your hook with four or five large gentles, or botts; cast your line, which ought to be fourteen or fifteen yards long, across the stream, and let the current carry it down, as they will take a fly much better a little under water than at the top. When you see your line draw, strike pretty smart. Your rod should be six yards, and not too slender. A small lamprey is no bad bait for a chub.

THE BLEAK.

THE bleak seldom exceeds six inches in length: the body is broadish, and not unlike

unlike that of a sprat ; the head small ; the scales are thin, and of a silver colour, and come off easily. The back is of a blueish or greenish brown, and the eyes are large, marked on the lower side with a blood-coloured spot. The skull is transparent, and the flesh is sweet, delicate, and nourishing. Artificial pearls are made with the scales of the bleak. They are beat into a fine powder, then diluted with water, and introduced into a thin glass bubble, which is afterwards filled with wax. This art was invented by the French, and one artist in Paris has been known to use thirty hampers full of fish in his manufacture in one year. At certain seasons of the year, these fish seem to be affected with the vertigo : they are seen tumbling about near the surface of the water, and are then called mad bleaks by the Thames fishermen.

The bleak spawns in March, and recovers its strength in three weeks. The flesh is sweet, nourishing, and pleasant, but little sought after on account of the diminutive size of the fish.

The best baits for him in the cold months are gentles and small red-worms, and in summer you may catch great numbers with an artificial ant-fly, or a very small

small gnat. There cannot be better sport than whipping for bleaks, in a boat, or on a bank in the swift water, in a summer's evening, with a hazle-top, about five or six feet long, and a line twice the length of the rod. Point your hook with a small gentle. As this fish is always changing its situation, and seems to be ever restless, and ever in motion, the best method of angling for him is with a pater-noster line ; that is, a line with half a dozen or more hooks, tied to the main line, about three or four inches above one another. He will take your bait wherever he meets it.

THE WHITE BAIT.

VARIOUS are the conjectures about this species ; the general opinion however is, that they are the fry of some fish. Some attribute it to the bleak, others to the shad, the sprat, and the smelt. It bears a greater similarity to the bleak than to any other, but it is impossible for us to class it with any degree of certainty. In the months of July and August, innumerable multitudes of these fish are taken in the Thames, near Blackwall and Greenwich. They are esteemed

esteemed very delicious when fried with flower, and the taverns contiguous to those places are much resorted to, when the white bait are in season, by the lower order of epicures. The head, back, and sides of this fish are silvery ; and the back tinged with green. Its usual length is about two inches. It is remarkable, that these fish expire the very instant they are taken out of the water. A wager was laid in the summer of 1775, that a person could not shew a live white bait above London-bridge. The experiment was tried, a well-boat was procured, and some hundreds of these little fish poured into it the instant they were taken out of the Thames ; the utmost expedition was then used to get to the west side of London-bridge ; after which the fish were immediately inspected, and not one of them remained alive.

THE MINNOW.

THE minnow is much smaller than the gudgeon, having a roundish body, and seldom exceeds three inches in length. Its body is smooth, and the scales are so small as to be hardly visible. The back is flat, and of a deep olive colour : the belly

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belly and sides are mottled with scarlet in some, in others white, and in others with a shining blue. The tail is forked, and marked near the base with a dusky spot. These beautiful fish appear in shoals in many of our small gravelly streams.

THE GOLD FISH.

THE gold fish was first introduced into this country about the year 1691, but were not generally known till 1728, when many of them were brought to England. In China gold fish are kept for amusement by every person of fashion, either in porcelain or glass vessels, or in the small basons that decorate the courts of the Chinese houses. The form of the gold fish resembles that of the carp : they have been seen in England of the length of eight inches, and Du Halde informs us, they grow to the size of our largest herring in their native country. In the colours of this fish, there is infinite variety : some are marked with a fine blue, a brown, and a bright silver ; but the general and predominant colour is gold of a most amazing splendour. This species is particularly distinguished by the

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anal fins, which are placed opposite each other like the ventral fins ; and not behind each other like those of other fish.

OF THE DIVISION OF SHELL-FISH.

THESE are usually divided, by naturalists, into crustaceous and testaceous animals. Crustaceous fish, such as the crab and the lobster, are furnished with a shell that is not of a stony hardness, but is in some measure capable of yielding. Testaceous fishes, like the oyster or cockle, are furnished with a shell of a stony hardness ; which is brittle, and incapable of yielding. The lobster, the crab, and the tortoise, are of the crustaceous kinds : the numerous tribe of oysters, muscles, cockles, and sea-snails, which offer infinite variety, are of the testaceous kinds.

THE LOBSTER.

THE lobster and the crab, however different in figure, are nearly the same in manners and conformation. Though without any warmth in their bodies, or even without red blood circulating thro' their veins, they are animals wonderfully

voracious: they seize upon every thing that has life, and whatever they attack is sure to perish, though never so well defended. These voracious animals even devour each other; and they may, in some measure, be said to eat themselves; as they annually change their shell and stomach, and their old stomach is usually the first repast for the new one.

The form of the lobster is so very extraordinary, that the head may be almost mistaken for the tail; but it may be soon discovered, that the animal moves with its claws foremost; and that the part which plays within itself by joints, like a coat of armour is the tail. The two great claws, which are the lobster's instruments of provision and defence, open like a pair of nippers, and have very great power; they are usually notched like a saw, which enables it to take the firmer hold. Besides these instruments, the animal has eight legs, four on each side; which, with the assistance of the tail, give the animal its progressive and deling motion. The head, which is very small, is between the two claws, and furnished with eyes, which appear like two black horny specks on each side. The mouth, like that of insects, opens

the long way of the body; and is furnished with two teeth for the comminution of its food: between the two teeth there is a fleshy substance in the shape of a tongue. It has also three teeth in the stomach; one on each side and the other below. It has two long feelers or horns, that issue on each side of the head. The tail is the grand instrument of motion; and with this it can raise itself in the water. Under this the spawn is lodged in great abundance every pea adhering to the next by a very fine filament, which is almost imperceptible. They continue in this situation till they become furnished with limb and motion, and then drop off into the water.

After leaving the parent, the young lobsters immediately seek for refuge in the smallest clefts of rocks, or other crevices at the bottom of the sea, where the opening is but small, and such opening can be easily defended. There they grow larger in a very short time, from the mere accidental nourishment which the water washes to their retreats. In a few weeks they acquire an hard firm shell, which furnishes them with offensive and defensive armour.

The body of the lobster continues to increase, while the shell continues of the same size; the animal thus becomes too large for its habitation, and is imprisoned within the crust that nature has gathered round it; and is therefore under a necessity of getting free. As the young of this kind grow faster, they change their shell oftener than the old; the latter remaining in the same shell for two or three years together. In general, however, they change their shell once a year; but for some days before it undergoes this change, it ceases to be so voracious as formerly, and lies torpid and motionless, as if in anxious expectation of the approaching alteration. Just before casting its shell, it throws itself upon its back, and the whole body is in violent motion, and at length the shell is seen beginning to divide at its junc- tures. It also appears turned inside out, and its stomach comes away with its shell. In a short time, however, this wonderful creature finds itself at liberty; but in so weak and enfeebled a state, that it continues motionless for several hours. After this extraordinary change, it has the softness, and the timidity of a worm; every animal of the deep being then a

powerful enemy, which they can neither escape or oppose. But this state of defenceless imbecility is of short duration, for in less than two days, the skin of its body is almost as hard as before; its appetite also increases; and, however extraordinary it may appear, its first repast is upon its own stomach, and afterwards it devours its former shell. In about forty-eight hours the new shell is perfectly formed, and becomes as hard as that which it has parted with.

Thus newly equipped, the creature ventures more boldly among the animals at bottom, and, in its combats, frequently suffers some mutilation. A joint or a claw is sometimes lost in these encounters, which nature quickly repairs; a new claw speedily springs out, which, at first, is small and tender, but in the space of three weeks becomes *almost* as large as the old one which is lost; but it never arrives to the full size: we often see the claws of lobsters of unequal magnitude, which is thus accounted for.

There are many variations of this extraordinary animal. It is found above three feet in length, and if we admit the shrimp and the prawn in the class, it is some-

sometimes seen not above an inch. These all live in the water, and cannot long endure its absence. The shell, when taken out of the water, is black, but becomes red by boiling.

The river craw-fish differs little from the lobster ; but it will live only in the fresh water, and the other only in the sea.

THE C R A B.

THE crab resembles the lobster in its habits and conformation, but differs materially in shape. It is found equally in fresh and salt water, as well upon land as in the ocean. The tail is not so apparent as in the former ; being that broad flap that appears to cover a part of the belly, and, when lifted, discovers the spawn situated there in great abundance. Like the lobster, it has two claws ; and, like the lobster, it has eight legs, four on each side. Like the lobster, it is also a bold voracious animal ; and indeed it resembles that animal in every thing but the amazing bulk of its body, compared to the size of its head, and the length of its intestines, which have many convolutions.

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THE VIOLET C R A B.

THE violet crab of the Caribbe Islands is truly remarkable for its shape, the delicacy of its flesh, and the singularity of its manners. It resembles two hands cut through the middle, and joined together; for each side looks like four fingers, and the two nippers or claws resemble the thumbs. The rest of the body is covered with a shell, as large as a man's hand, and bunched in the middle; on the fore part of which there are two long transparent eyes, about the size of a grain of barley, and as hard as horn. The mouth is covered with a kind of barbs; under which there are two broad sharp teeth as white as snow. With these the animal can easily cut fruits, leaves, and rotten wood, which is their usual food.

The shell is full of a thick, fat, fibrous liquor, which is used by the inhabitants in sauces. In the middle of this is the stomach; and under the body there is a kind of breast-plate, composed of several pieces set together; and beneath that, on each side, there are five or six barbs.

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These animals are, in general, of a violet colour, though some are variegated with white, blue, and violet: but the surprizing part of this creature's history is to follow; and what I am going to relate, were it not as confidently confirmed as any other circumstance in natural history, might well stagger our belief. They not only live in a kind of orderly society in their retreats in the mountains; but in the months of April or May, they march down to the sea-side in a body of some millions at a time: they sally out by thousands from the stumps of hollow trees, from the clefts of rocks, and from the holes which they dig for themselves under the surface of the earth. The ground is then covered with this band of adventurers, insomuch, that it is almost impossible to set down one's foot without treading upon them *. The procession sets forward from the mountains with as much regularity, as an army under the guidance of an experienced general; and are usually divided into three battalions or companies; the first of which consists of the largest and strongest males, that, like pioneers, march forward to clear the route, and face the greatest dangers.

* Labat, *voyage aux Isle Françoise*, ii. 221.
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These are often obliged to halt for want of rain, and go into the most convenient encampment till the weather changes, for they cannot long endure the intense heat of the sun. The main body of the army is composed of females, which never leave the mountains till the rain is set in for some time, and then they descend in regular battalia, being formed into columns of fifty paces in breadth, and three miles in length, and so close, that they almost cover the ground. Three or four days after this the rear-guard follows; a straggling undisciplined tribe, consisting of both males and females. They march chiefly in the night, but if it rains in the day, they do not fail to profit by the occasion; and they continue to move forward in their slow uniform manner. When the sun shines, they get to the sides of woods to avoid the heat, waiting till the cool of the evening. When they are terrified, they march back in a confused disorderly manner, holding up their nippers, with which they sometimes tear off a piece of the skin, and then leave the weapon where they inflicted the wound: they even try to intimidate their enemies, by clattering their nippers together. They are however pos-

possessed of one very unsocial property, for if any one of them becomes accidentally maimed, so as to be incapable of proceeding, the rest fall upon him, and devour him on the spot.

In dry seasons they are sometimes three months in marching down to the seaside; but, in heavy rains, they often reach it in eight or ten days.

When they have arrived at their destined port, they prepare to cast their spawn. The crab has no sooner reached the shore, than it hastens eagerly to the edge of the water, and suffers the waves that beat upon the shore to flow over its body two or three times. This seems only a preparation for bringing their spawn to maturity; for, without farther delay, they withdraw to seek a lodging upon land. In the mean time the spawn grows larger, is excluded out of the body, and adheres to the barbs under the breast-plate. This bunch is seen as large as a hen's egg, and exactly resembling the roes of herrings. In this state of pregnancy, they again seek the shore for the last time, and shaking off their spawn into the water, leave chance to bring it to maturity. Immense shoals of hungry fish are at the shore in expectation

pectation of this annual supply; and about two-thirds of the crabs eggs are immediately devoured by these rapacious invaders. The eggs which escape are hatched under the sand; and soon after millions at a time of these little crabs are seen quitting the shore, and slowly travelling up the mountains.

The old ones, however, are not so active to return; they become so lean and feeble that they can hardly creep along, and the flesh at that time changes its colour; therefore most of them are obliged to stay in the flat parts till they recover, making holes in the earth which they cover at the mouth with leaves and dirt, so that no air may enter. There they throw off their old shells, which they leave in a manner quite whole; the place where they opened on the belly being unseen. After this they are quite naked, and almost without motion, for five or six days together, when they become so fat as to be delicious food. They have then four large white stones under their stomachs, which gradually decrease in proportion as the shell hardens, and, when they come to perfection, entirely disappear. At that time

the animal is seen slowly making its way back to its retreats in the mountains.

THE SOLDIER C R A B.

THE soldier crab has some similitude to the lobster, if divested of its shell. It is usually about four inches long, has no shell behind, but is covered down to the tail with a rough skin, terminating in a point. Like the lobster, however, it is armed with strong hard nippers before; one of which is as thick as a man's thumb, and pinches most powerfully. But though nature has refused a shell to any part of this animal except its nippers, the soldier crab has recourse to art for a supply: it takes possession of the deserted shell of some other animal, in which it resides, till, by growing too large for its habitation, it is under a necessity of change. They descend every year to the sea-side to deposit their spawn and provide themselves with a new shell; and when they find one proportionable to their bulk they get into it, and march along as if they were cloathed in armour; from whence they have the name of soldiers. They march up to the tops of mountains, and take their lodgings

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in hollow trees, where they live upon leaves, fruits, and rotten wood. The next year, when the body begins to grow too large for the shell, they travel down to the sea-side again, in search of others that fit them better. After examining several and finding out one of a proper size, they immediately quit their old habitation and occupy the new one.

Besides these there are the white crab of the Caribbee Islands; the sea-crab; the square crab; the South-American crab; the Indian Land crab, &c. but they have all one property, which is very wonderful. When their nippers are laid hold of, they can easily part with them to make their escape; besides, if one of them should happen to be wounded, the animal immediately parts with it, and by that means gets rid of the wound and the limb together; well-knowing that nature will soon furnish it with another.

THE T O R T O I S E.

TORTOISES are usually divided into those that live upon land, and those that subsist in the water; and use has made a distinction even in the name; the one

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being called tortoises, the other turtles. Seba has proved, however, that all tortoises are amphibious; that the land tortoise will live in the water, and that the sea turtle can be fed upon land. The land tortoise is generally found from one foot to five feet long, from the end of the snout to the end of the tail; and from five to eighteen inches a-cross the back. It has a small head, somewhat resembling that of a serpent; an eye without the upper lid; the under eye-lid serving to cover and keep that organ in safety. It has a long scaly tail, like that of the lizard. It can put out or conceal its head at pleasure, under the great pent-house of its shell; where it can remain secure from all attacks.

Though peaceable in itself, the tortoise is admirably formed for war, and seems almost endued with immortality. Nothing can kill it; the depriving it of part of its body, is but a slight injury; it will live, though deprived of the brain; it will live though deprived of the head. Redi informs us, that he made a large opening in the head of a land tortoise, drew out all the brain, and washed the cavity so as not to leave the smallest part remaining, and then, leaving the hole

N 2 open,

open, set the animal at liberty. Notwithstanding this, the tortoise marched away without seeming to have received the smallest injury; and lived without a brain for six months. The Italian philosopher carried his experiment still farther; for he cut off the head, and the animal lived twenty-three days after its separation from the body.

Tortoises are also remarkable for their longevity: they are commonly known to live upwards of eighty years. There was one kept in the garden belonging to Lambeth palace, that was remembered above an hundred and twenty.

This animal retires to some cavern to sleep for the winter; and, at that time, when its food is no longer in plenty, it happily becomes insensible to the want: it is sometimes buried two or three feet in the ground, having first providently furnished its hole with moss, grass and other substances; as well to keep the retreat warm, as to serve for food, in case it should prematurely wake from its state of stupefaction. From this dormant state the tortoise is awakened by the genial return of spring.

These animals are frequently taken into gardens, as they are thought to de-

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stroy insects and snails in great abundance. The strength of the tortoise is very great; children have been seen to get upon the back of it, and it has not appeared to be over-loaded, but moved off with its burthen to where it expected to be fed; but would carry them no farther.

In their external form, all tortoises nearly resemble each other; their outward covering being composed of two great shells; one of which is laid upon the other, and they touch only at the edges: but upon a closer inspection, we shall find that the upper shell is composed of no less than thirteen pieces, which are laid flat upon the ribs, like the tiles of an house; by which the shell is kept arched and supported. Indeed, to an inattentive observer, the shells, both above and below, seem to make each but one piece; but they are bound together at the edges by very strong and hard ligaments.

THE SEA TORTOISE, OR TURTLE.

TURTLES are usually distinguished by sailors into four kinds; the trunk
N 3 turtle

turtle, the logger-head, the hawksbill, and the green turtle.

The trunk turtle, is generally larger than the rest, and its back is higher and rounder. The flesh of this turtle is rank and unwholesome.

The logger-head has obtained his title, from the size of his head, which is much larger in proportion than that of the other kinds. The flesh of this also is rank, and very seldom eaten.

The hawksbill turtle, has a long and small mouth, somewhat resembling the bill of an hawk. Though the flesh of this turtle is very indifferent, the shell serves for the most valuable purposes. This is the animal which supplies the tortoise-shell, of which snuff-boxes and a variety of beautiful trinkets are made. The flesh of this also is very indifferent eating.

The green turtle is the most celebrated, and the most valuable of all the animals of the tortoise kind. The delicacy of its flesh, and its nutritive qualities, together with the property of being easily digested, are now well known among us. Dampier appears to be the first who informed us of the distinctions among these animals; and that, while the

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rest might be valuable for other purposes, the green turtle alone was chiefly prized for the delicacy of its flesh. The green turtle is indeed become a branch of commerce, and ships are provided with conveniences for supplying them with water and provision, to bring them over in health from Jamaica and other West-India Islands. This cannot, however, be always effected; for though they scarce require any provision upon the voyage; yet the working of the ship occasions them to be beat against the sides of the boat which contains them, by which they become very lean and battered; so that, in order to eat this animal in the highest perfection, instead of bringing the turtle to the epicure, the epicure ought to be transported to the turtle.

The colour of the shell of this animal is rather greener than that of others of this kind; whence it has the name of the green turtle. Those which are about two hundred weight are the most common size, though they are sometimes found to exceed five hundred. During the season, the citizens of London are remarkable for regaling themselves upon turtle, and great numbers of these animals are dressed at the Queen's-arms-tavern,

tavern, in St. Paul's-church-yard, where we remember to have seen them in the two extremes: Mr. Bates exhibited at one time three turtles, two of which together did not weigh three ounces, and the other exceeded nine hundred pounds in weight. The ancients, however, speak of much larger turtles: Ælian assures us, that the houses in the island of Taprobane, are usually covered with a single shell; and Diodorus Siculus tells us, that a people neighbouring on Ethiopia, called the turtle-eaters, coasted along the shore in boats made of the upper shell of this animal.

The turtle seldom comes from the sea but to deposit its eggs, and sometimes to sport in fresh water. In about twenty-five days after laying, the eggs are hatched by the heat of the sun; and the young turtles about the size of quails, are seen bursting from the sand, as if earth-born, and running directly to the sea, with instinct only for their guide. But it sometimes happens that the surges of the sea beat them back upon the shore, and they become a prey to the innumerable quantities of birds which, at that time, haunt the coasts.

Of Sea

Of Sea S N A I L S.

THOUGH the land and sea snails resemble each other in many particulars, many of the latter are totally destitute of horns, and none of them have more than two. Indeed, if the horns of snails are furnished with eyes; and if, as some imagine, the length of the horn, like the tube of a telescope, assist vision, these animals that reside in the gloomy bottom of the deep, can have no great occasion for them.

On viewing the shells of sea-snails, we are convinced, that the animal which produces them is larger than those of the same denomination upon land. The sea appears to have the property of enlarging the magnitude of all its inhabitants. There is also a difference in the position of the mouth of the garden and sea snail. In the former, the mouth is placed cross-wise, as in quadrupedes; furnished with jaw-bones, lips and teeth. In most of the sea-snails, the mouth is placed longitudinally in the head; and, in some, obliquely, or on one side. Others of the trochus kind, are without a mouth, but are furnished with a trunk, which

which is very long in some kinds, and shorter in others. Those which are provided with this trunk, are, among snails, what the tiger, the eagle, or the shark, are among beasts, birds, or fishes: the whole race of shelled animals avoid their approach; and their strongest built habitations yield to the superior force of these invaders. Though their own shells are thick and clumsy, yet their motion at the bottom is swifter than that of most other shell-fish; and they seize their prey with greater facility. They boldly venture to attack even the largest shells, and with their piercing trunk bore it through in a very short time, and destroy its inhabitant.

But, of all sea snails, that which is most frequently seen swimming on the surface is the nautilus; of which there are several species, which may be all divided into two. The one inhabits a small white shell as thin as paper, which it is often seen to quit and resume again; the other has a thicker shell, of the colour of mother of pearl, and but seldom quits it. This shell externally resembles that of a large snail; but is generally six or eight inches a-cross: within it is divided into forty partitions, that

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communicate with each other by doors, if I may so call them. But the peculiarity for which the nautilus has been the most distinguished, is its spreading the thin oar, and catching the flying gale, to use the poet's description of it. These animals, especially those of the light kind, are chiefly found in the Mediterranean. In a calm sea, they are observed floating on the surface; some spreading their little sail; some rowing with their feet, as if they were engaged in business of the utmost consequence; and others floating upon their mouths, like a ship with the keel upwards.

The nautilus has eight feet, which issue near the mouth, and may as properly be called barbs: these are connected to each other by a skin, resembling that between the toes of the duck; but thinner and more transparent; six of these feet are shorter than the rest, and are held up as sails to catch the wind in sailing: the two others, which are longer, are kept in the water, serving, like paddles, to steer their course by. When the weather is calm, it is seen expanding only a part of its sail, and rowing with the rest.

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Sea-snails of every species appear to be a much more active animated tribe, than from their figure we should be induced to imagine. Though they seem, to an inattentive spectator, as mere inert masses of soft flesh, rather *loaded* than *covered* with a shell; when more closely examined, they are found to be furnished with the organs of life and sensation in tolerable perfection; and are possessed of appetites more poignant than those of animals that seem more perfect in their formation.

OF FISHES OF THE OYSTER KIND.

THE oyster differs very little from the muscle, except in the thickness of its shell, and its greater imbecility. It is formed with organs of life and respiration; with intestines which are very voluminous, and with a liver, lungs and heart. Like the muscle it is self-impregnated; and the shell, which the animal soon acquires, serves it for its future habitation. Like the muscle, it opens its shell to receive the influx of water; and like that animal is strongly attached to its shell both above and below.

In many particulars, however, the oyster differs from the muscle. The shells are not equal like those of the muscle, the one being cupped, and the other flat: it always rests upon the cupped shell; for it would lose all its water if it lay upon the flat side. The shells of the oyster are also thicker than those of the muscle: they are indeed so strongly lined and defended, that no animal will attempt to pierce them.

The muscle is capable of erecting itself on an edge, and going forward with a slow laborious motion; but the oyster is utterly unable to change its situation. It is wholly passive, and endeavours by all its powers to remain fixed to one spot at the bottom. Rocks, stones, seaweeds, &c. secure it against the agitation of the waves. In the rivers of the tropical climates, oysters are frequently seen growing even amidst the branches of the forest. Trees on the banks of the stream often bend their branches into the water, and particularly the mangrove, which delights in a moist situation: on these the oysters hang in clusters; and in proportion as their weight sinks the plant into the water (where it still continues growing,) the oysters increase in number,

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and hang upon the branches. These animals will adhere to any thing ; and are often found sticking to each other. This is effected by means of a kind of glue, which, when it cements, the joining is as hard as the shell, and is as difficult to be broken. Sometimes indeed the oyster grows to the rocks, somewhat like the muscle, by threals : but these only take root in the shell, and do not spring from the body of the fish itself, as in the muscle.

Oysters usually cast their spawn in May : in the space of two or three days the young are covered with a shell ; and in three years the fish is large enough to be brought to market. As they continue in the places where they are deposited, and as they seem to have no other food than the afflux of sea-water ; it is the custom at Colchester, and other places where the tide settles in marshes on land, to pick up large quantities of young oysters along the shore, which hardly exceed the size of a six-pence. These are placed in beds where the tide comes in, where they remain for the space of two or three years ; and are then of a proper size to be taken for sale. Oysters are said to be better tasted for being thus sheltered

sheltered from the agitations of the deep: and the fresh water, which mixes with the salt in these repositories, is said to increase their growth and fatness, and to improve their flavour.

But these oysters are much smaller than those which are found sticking to rocks at the bottom of the sea, usually called rock-oysters: these are sometimes found five or six inches in diameter, and are esteemed excellent food; but even these are very diminutive, compared to the oysters of the East Indies, some of which are upwards of two feet over: those found along the coast of Coromandel are capable of furnishing a plentiful meal to eight or ten people; but they are much inferior to ours both in delicacy and flavour.

Other bivalved shell-fish, such as the cockle, the scallop, and the razor-shell, have very minute distinctions. The scallop is principally remarkable for its method of moving forward upon land, or swimming upon the surface of the water. When it is deserted by the tide, it makes very extraordinary efforts to regain the water, moving towards the sea in a most singular manner. When in the water, it is capable of raising itself to the surface, supporting itself there, and

even of making its way with some degree of celerity.

The pivot, or razor-shell, which has the latter name from its resembling the haft of a razor, has all its motions confined to sinking or raising a foot downwards or upwards in the sand ; for it never quits the spot where it was first planted. It is frequently seen to rise about half way out of its hole, but as soon as it is disturbed, it sinks perpendicularly down again.

It is in this class of shell-fish that pearls are found in greatest abundance ; and it is in the internal parts of these shells that are of a shining silvery colour, that these gems are usually generated ; but the pearl is also found in the muscle or the scallop, as well as in the oyster : but that which particularly obtains the name of the pearl oyster, has a large strong whitish shell, wrinkled and rough without, and within smooth, and of a silver colour. From these the mother-of-pearl is taken ; which is nothing more than the internal coats of the shell, resembling the pearl in colour and consistence.

The roundest pearls, and those of the best colour, are brought from the east :

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they are whiter and more regular than the American pearls ; but they all become yellow in time. When kept in damp places they decay, and moulder into a substance not much harder than chalk. The greatest pearl-fisheries are in America and Asia ; but as pearls are less valuable than they formerly were, those of America are in a great measure discontinued.

THE SEA URCHIN.

AT the first view, the sea-urchin may be compared to the husk of a chesnut ; being like it in shape, and having a number of bony prickles standing out on every side. The mouth is placed downwards ; the vent is above ; the shell is a hollow base, resembling a scooped apple, and is filled with a soft muscular substance, through which the intestines wind from the top to the bottom. The mouth, which is large and red, is furnished with five sharp teeth, which are easily discerned. It is principally remarkable on account of its horns and spines, which point from every part of the body, like the horns of a snail, and serve at once as legs to move upon, as

arms to feel with, and as instruments of capture and defence.

It is in general observed of insects, that those which have the greatest number of legs always move the slowest ; this animal however is an exception to the general rule ; for though it is furnished with two thousand spines, and twelve hundred horns, all serving for legs, and from their number seeming to impede each others motion, yet it moves at the bottom with some degree of swiftness. Some kinds of this animal are as good eating as the lobster, and its eggs, which are red, are esteemed a great delicacy.

The acorn shell-fish, the thumb-footed shell-fish, and the imaginary barnacle, resemble the sea-urchin in shape, but are very different in motion. They are fixed to one spot, and appear to vegetate from a stalk. To an inattentive spectator, each appears to be a kind of fungus that grows in the deep, destitute of animal life as well as motion : but it has a cover, by which it opens and shuts its shell at pleasure. It has twelve long crooked arms, furnished with hair, which it thrusts forth for its prey ; and eight smaller,

smaller, which are generally kept in the shell.

But of all animals of the shelly tribe the pholas is the most wonderful. The pholas assumes different figures ; but in general it somewhat resembles a muscle ; except that the shell is composed of five or more pieces ; the smaller valves serving to close up the openings, left by the irregular meeting of the two principal shells. But the most wonderful part of their history is that of their penetrating into rocks, and taking up their residence there. When divested of its shell, this animal resembles a roundish soft pudding : it is indeed furnished with two teeth ; but they are so situated as to be incapable of touching the hollow surface of its stony dwelling. The instrument with which it performs all its operations, and buries itself in the hardest rocks, is only a broad fleshy substance, resembling a tongue, which is seen issuing from the bottom of the shell. Thus, furnished with the bluntest and softest augre, it effects, by patience and successive applications, what other animals are incapable of performing by force ; penetrating the hardest bodies only with its tongue. It begins to make its way into

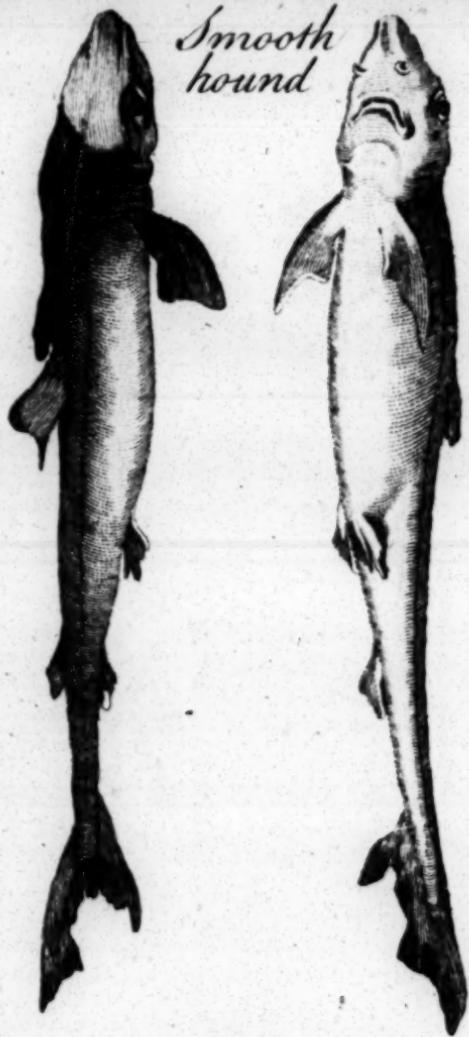
into the stone while young and little, by a very narrow entrance ; and as it grows bigger it enlarges its apartments. Here it continues at ease for its life ; and the sea water, which enters at the little aperture, supplies it with luxurious plenty.

END OF VOL. II. OF THE NATURAL
HISTORY OF FISHES.

*** We have procured an accurate drawing of the Ballan, but we have not been able to obtain any account of the Colour of that fish ; we can therefore only give the Figure of it. It appears to be a species between the Cook and the Pearch. The smooth hound is in the same predicament.



*Smooth
hound*





Ballam

vol. I





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